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ABSTRACT

To gain some perspective on the current interest in and use of educational technology, the Ohio Department of Education awarded a grant to the Cincinnati Public Schools to conduct a survey on the uses of new technologies in school districts throughout the state. The results of that survey are summarized in this report by the following topics: computer-assisted instruction, computer-managed instruction, computer-based learning, student academic records, student non-academic records, cable and broadcast television, video technology, microcomputers by school level, microcomputer funding, microcomputer brands, purchase policies, staff training, sources of training, program organization, and mainframe computers. Data tables illustrate problems and benefits associated with the use of educational technology, and a 20-item summary presents the major findings of the survey. Five appendices present data for survey responses by type of district, size of district, district per pupil expenditure, and joint vocational school results, and provide the survey questionnaire. Also included are references for computer-assisted instruction, computer-based learning, and program development and implementation. (JB)

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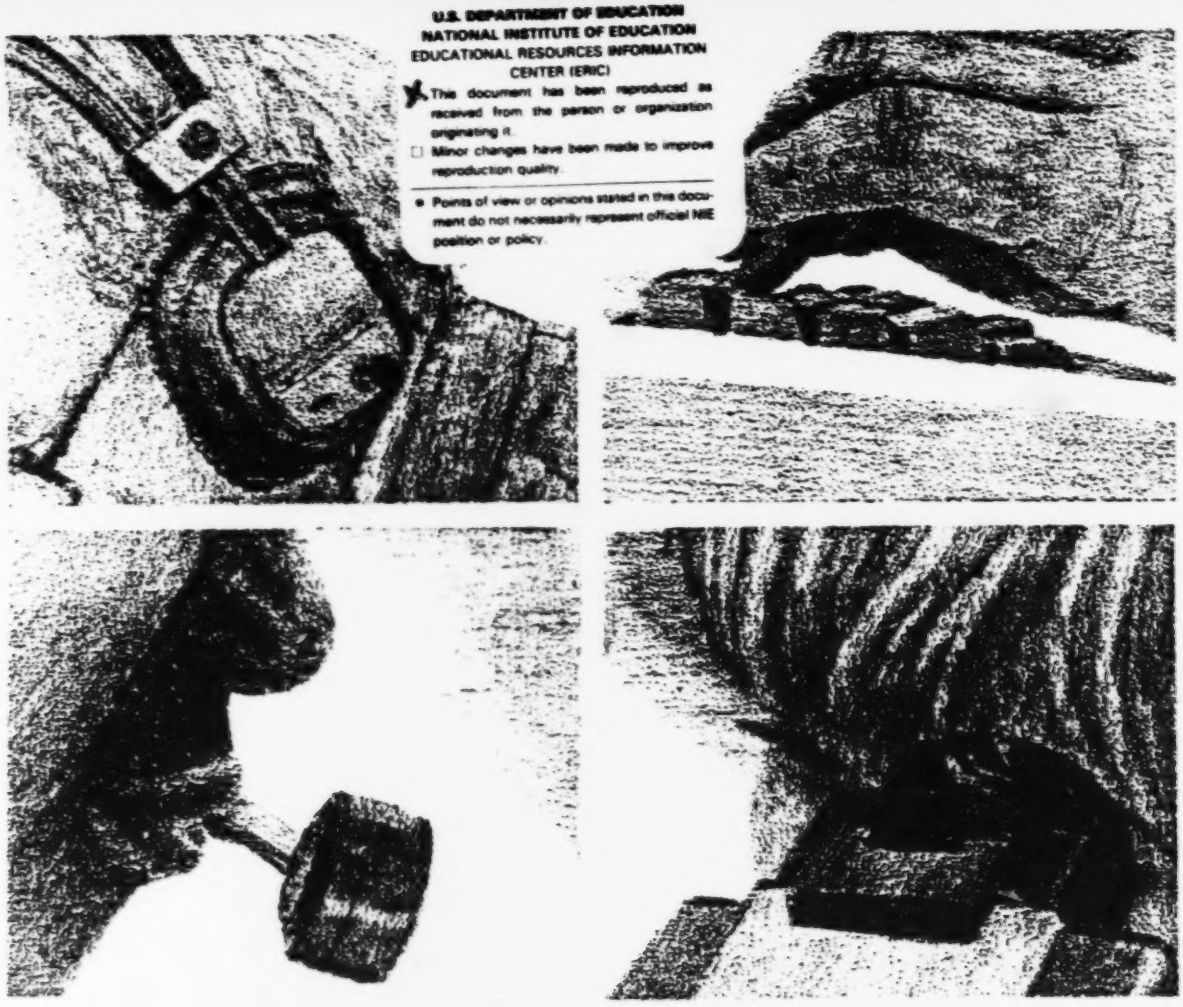

Educational Technology in Ohio School Districts: A Report of Survey Results

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Educational Technology in Ohio School Districts: A Report of Survey Results

Prepared by James M. Morgan, Assistant Director

Resource Planning and Development Branch

Department of Curriculum and Instruction

Cincinnati Public Schools—Cincinnati, Ohio

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INTRODUCTION

Every day, it seems, one reads in educational journals or the daily press of some exciting new use of microcomputers in the classroom. Equally fascinating are the stories about the instructional uses of cable and satellite television. The impact of technology on education is growing more apparent every day.

To gain some perspective on all this interest in educational technology, the Ohio Department of Education awarded a grant to the Cincinnati Public Schools to conduct a survey on the uses of the new technologies in school districts throughout the state. The Department of Education was specifically interested in finding out how computers, television, and other technology are being used for instructional purposes in Ohio school districts. Another report entitled, "The Microcomputer Planning Guide," is also available from the Department which provides recommendations on appropriate uses of computer technology in the schools.

To develop the survey, a comprehensive review was conducted of recently published reports and resources in the area of educational technology. Particular attention was paid to the results of any state or national study on the use of educational technology by school districts. It was found that most states are at about the same stage as Ohio—surveying their school districts and preparing reports of the results. A few states such as Tennessee and Alaska have published informative reports of their studies.

Studies by the National Center for Educational Statistics, Educational Research Service, and the National Education Association (NEA) attest to the explosive growth of educational technology, particularly microcomputers, in the past few years. An especially comprehensive national study by the Center for Social Organization of the Schools at John Hopkins University reported that the number of elementary schools having at least one microcomputer jumped from less than 1% in July 1980 to 51% in January 1983. The NEA study indicated that nearly 75% of the nation's school districts are using microcomputers and that this percentage is likely to increase to over 90% in the next year.

A draft copy of the survey was developed and sent to a panel of reviewers including three superintendents of an urban, suburban, and rural district, a university professor, local experts in educational technology, and a representative of the Ohio Department of Education. The final version of the survey was mailed in March to the superintendent of each city, local, exempted village, and joint vocational district in Ohio. A copy of the survey is contained in Appendix E.

Final tabulation of returns showed that 374 of the 616 districts had responded for a 61% return rate. A preliminary set of the survey results was sent to the review panel for their comments which were used in the discussion of the results in this report. A draft of this report was also sent to other panel members for their review.

The results of the survey are summarized by topics in the following sections of the report. Some sections contain brief discussions of the topics based on the results of the review of resources noted previously. The sections are:

Instructional Uses of Technology
—a summary of the results for various types of instructional applications;

Program Development and Implementation
—a summary of the results on how districts organize and operate their programs;

Problems and Benefits of Educational Technology
—ratings of items on the advantages and disadvantages of technology; and

Comments Regarding Educational Technology
—open responses from survey respondents on the use of technology.

The results of the survey are discussed in terms of three analyses of the data: type of district (city, exempted village, local); size as measured by Average Daily Membership (ADM); and financial status as measured by Per Pupil Expenditure (PPE). The distributions of ADM and PPE responses were divided by thirds into high, middle, and low. The data for district type are illustrated by charts and are included in Appendix A. The data for ADM and PPE are referenced in Appendixes B and C. A summary discussion of the results and a list of references follow the survey results sections. The results for joint vocational districts are reported separately in Appendix D.

"Microcomputers are the small, relatively inexpensive computers that have brought about the revolution in use of computers in education in the last few years."

SECTION I

Instructional Uses of Educational Technology

The first section of the survey contained items on the instructional uses of technology in the school districts. Survey respondents were asked to check the ways in which microcomputers and/or mainframe computers are used for instruction in school district classrooms. The results for the first part of the survey are presented in terms of usage by micro and mainframe computers.

Mainframe computers are usually located in a central location of the school district and used primarily for non-instructional, financial, or student record-keeping that require large amounts of storage capacity and fast data processing. Use of the mainframe computer for instruction is typically done through remote terminals in a classroom or a computer "lab" linked to the mainframe through phone lines.

Microcomputers, on the other hand, are the small, relatively inexpensive computers that have brought about the revolution in use of computers in education in the last few years. Microcomputers are sometimes referred to as "stand-alone devices" because they contain the input, storage and output components of a computer in a self-contained package that fits on a desktop. Because of their compact size, microcomputers can be easily moved from one classroom to another or arranged together in a lab setting. They can also use color, graphics, and sound to make instruction more exciting for students.

On the survey, instructional uses of computers were grouped into three categories: Computer-Assisted Instruction (CAI), Computer-Managed Instruction (CMI), and Computer-Based Learning (CBL). Each category contained a number of specific applications that are described briefly in the following sections before the actual survey results.

Computer-Assisted Instruction

Background. Computer-assisted instruction has become a general term for use of computers for instruction. For the purposes of the survey, it was restricted to the direct instructional applications of drill and practice, tutorial, and remediation. Drill and practice is the repeated presentation of problems or factual items such as multiplication tables or vocabulary words that call for an immediate response on the part of the student. In other cases, students may have to select the correct answer from a set of multiple choices. The main characteristic of drill and practice is that it does not present new material to the student but merely provides drills on previously learned facts or concepts.

The use of computers for tutorial instruction means the direct teaching of new content through didactic presentation of the material, and the use of illustrations and examples of the content. In tutorial programs, content is broken into small increments of instruction, and frequent testing of the student's grasp of the content is used to help ensure mastery. Remedial uses of the computer involve the reteaching or reinforcement of content that was presented previously but not adequately learned by the student. Remediation on the computer often uses a combination of drill and practice and tutorial approaches. It is usually done in a lab setting which students attend on a regular basis in

addition to or in place of their regular classes. Remedial work is usually done in the basic skill areas of reading and mathematics whereas drill and practice and tutorial programs can cover a range of subjects from primary level language arts to secondary science and social studies.

As many educators have noted, the computer is uniquely suited to the kinds of direct instruction used in drill and practice, tutorial and remediation activities. These advantages include the ability of the computer to make repeated presentation of small and fixed amounts of instructional content while varying the format in which the material is presented. Because of this incremental approach to instruction, the computer is also able to test and evaluate the correctness of the student's responses more often and present frequent reinforcement for correct responses.

In addition, the computer can branch to other more or less difficult content based on evaluation of the student's responses. The computer can also provide immediate correction or explanation of wrong responses. Finally, the computer is able to present information or instruction in a highly individualized and even personalized format that increases its appeal to students.

"The computer is able to present information or instruction in a highly individualized and even personalized format that increases its appeal to students."

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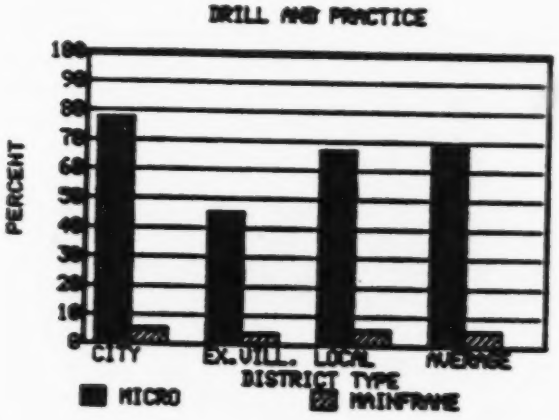

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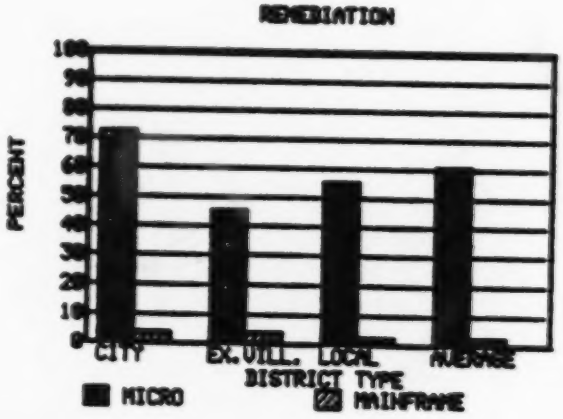

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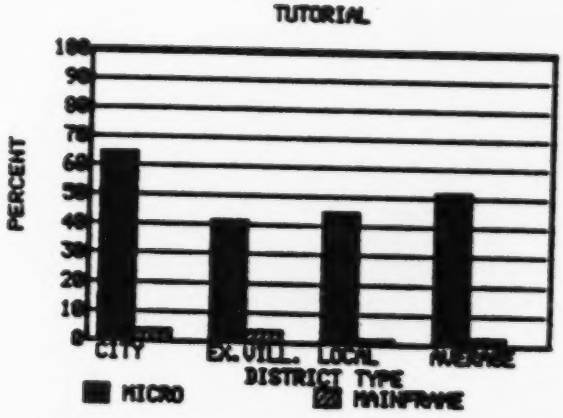

Results. As shown in Charts 1, 2, and 3, the survey results for computer-assisted instruction indicate that most districts are using microcomputers rather than mainframes for these applications. Across school district types, an average of 69.2% of the responding districts reported using microcomputers for drill and practice, 61.3% for remediation, and 51.7% for tutoring. However, less than 6% of the districts reported using their mainframe computers for any of these applications.

City districts show the highest CAI usage of microcomputers with 78.3% using them for drill and practice, 73.0% for remediation, and 65.2% for tutorial activities. Local districts showed somewhat less usage: 66.7% for drill and practice

56.3% for remediation, and 45.8% for tutorial activities. Exempted village districts showed the least usage—less than 46% in each of the three areas.

The analysis of survey responses for computer-assisted instruction by size of district (ADM) is given in Appendix B. It shows use of microcomputers for CAI increases with the size of the district. For example, 57.9% of the small districts reported using micros for drill and practice versus 68.8% of the middle size districts and 80.4% of the large districts. A similar trend is evident for tutorial and remediation uses.

The analysis of CAI responses by per pupil expenditure (PPE) of the districts contained in Appendix C shows that more of the high PPE districts use their micros for drill and practice and remediation than do middle and low PPE districts. Regardless of financial status, the districts are nearly equal in their use of micros for tutorial applications.

In general, the results for computer-assisted instruction indicate that city districts are showing the highest use of microcomputers for CAI and that usage is associated with the size of the district. While usage is also associated with the per pupil expenditure of the district, the association is not as strong as that for size. This seems to indicate that the use of computers for CAI is not as dependent on the financial status of the districts as some may think. It may be that the larger districts have more resources, including personnel, to implement CAI.

The low usage of mainframe computers for CAI is somewhat surprising since mainframes were the original means for doing computer-assisted instruction. It could be that their use for business applications precludes their use for instructional applications.

Computer-Managed Instruction

Background. The second category of usage on the survey was computer-managed instruction (CMI). This area includes the use of the computer for student testing, generation of student reports, and development of instructional prescriptions. Student testing via the computer can mean the actual presentation of test items on the screen or the scoring of an answer sheet on which the student responds. The computer gives a summary report of correct and incorrect responses for each student and an entire class. This type of direct testing by the computer may be done using test items entered and stored in the computer by the teacher, or with standardized tests developed by software publishers.

More detailed analyses of the test results can be done which provide diagnostic information on each area tested for individual students and for whole classes or grade levels in a school. This generation of student reports, the second area of computer-managed instruction, is greatly facilitated by the computer since analyses of the test results can be done by content area or individual item. Reports can be produced which summarize a student's progress for mailing to parents or which show an entire school's status for district-wide reports.

The development of instructional prescriptions is perhaps the most sophisticated use of computers for computer-managed instruction. In this application, the computer prepares an analysis of students' test results and provides prescriptions or recommendations for remediation based on the analysis. These prescriptions may include references to textbooks, workbooks, or other instructional materials which the teacher can use to help overcome the specific weaknesses identified by the test.

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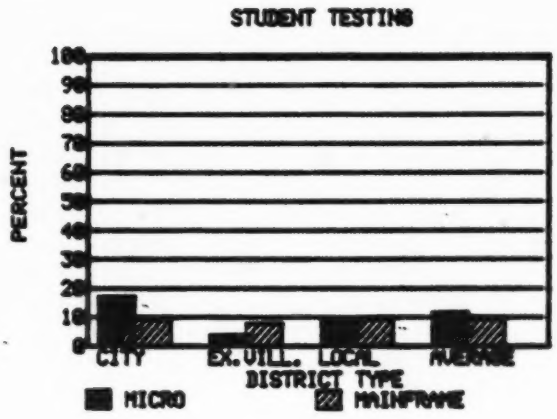

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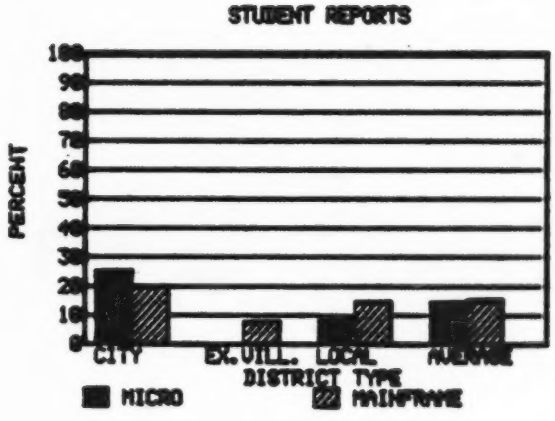

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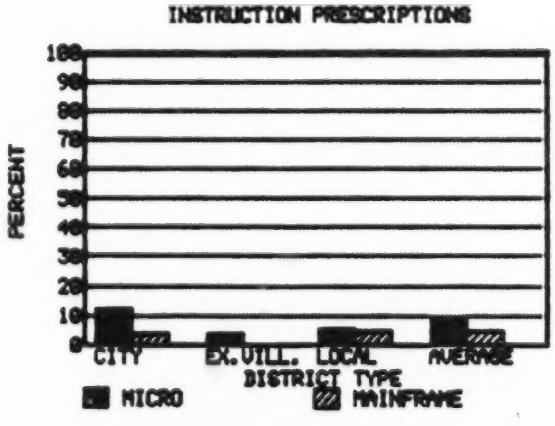

Results. Charts 4, 5, and 6 illustrate the survey results for computer-managed instruction by district type and show that the districts reported more nearly equal use of micros and mainframes for these types of applications. A slightly higher percent (16.1% vs. 14.5%) of the districts reported using mainframes rather than micros for generation of student reports. For student testing, 12.1% reported using micros vs. 10.0% using mainframe computers. For development of instructional prescriptions, 8.5% use micros and 4.5% use mainframes. These types of usage were highest in city districts and lowest in exempted village districts.

The analysis of the CMI results by size of district (Appendix B) shows that large districts use microcomputers for computer-managed instructional tasks more than do middle and small size districts. However, large districts reported greater use of mainframes than microcomputers for generation of student reports (25.9% vs. 19.6%), and reported equal usage (17%) of both types of computers for student testing.

The analysis of the CMI results by per pupil expenditure (Appendix C) of the districts shows that high PPE districts reported more usage of both types of computers for student testing and generation of reports. However, the districts were nearly equal in their use of computers for development of instructional prescriptions. The districts also showed somewhat greater use of mainframes than micros for generation of student reports regardless of their per pupil expenditures.

It should be noted that there is more nearly equal use of mainframes and micros for computer-managed instruction in contrast to disproportionate use of micros and mainframes for computer-assisted instruction reported previously. As yet, there is relatively little software available on the market for microcomputers for CMI. Most of these types of reports are done on a school-wide or district-wide basis requiring the larger memory and processing capacities of the mainframe computer.

Computer-Based Learning

Background. The third category of usage on the survey was computer-based learning activities (CBL) which include computer literacy, computer programming, word processing, simulations, and problem-solving. Computer literacy is an especially high interest area at this time as many districts are developing or adopting curricula to teach about computers. There are a number of areas included in the definition of computer literacy but most authors generally agree that it includes at least the following:

- the hardware components of a computer system including input, storage, processing, and output devices,
- the basics of computer processing of data,
- operation of a computer including data input, program storage, and operation of peripheral devices,
- an introduction to computer programming including writing and testing of simple programs,
- an overview of various types of standard software such as word processing, data base management, electronic spreadsheets, as well as instructional applications,
- study of how computers are used in scientific, business, education, and home settings,
- consideration of the social and personal implications of the use of computers.

The second area of computer-based learning on the survey was computer programming. While most districts are introducing computer literacy into their schools, some are going beyond it to teach students at all age levels how to program computers. The most popular programming languages being taught are LOGO, BASIC, and Pascal. Each language has certain advantages for instruction at different grade levels.

"Computer literacy is an especially high interest area at this time as many districts are developing or adopting curricula to teach about computers."

The other types of computer-based learning activities on the survey included word processing, simulation, and problem-solving. Most vocational schools and some high schools now teach word processing, rather than typing, as an office practices skill. In addition, language arts and English teachers at all levels are beginning to see the value of word processing for teaching written composition skills. Simulation on the computer allows students to model real-life events and processes in the classroom. Problem-solving allows students to generate and test hypotheses and examine the outcomes or effects of various alternatives. These two applications have a wide variety of uses including testing biological or chemical reactions in the laboratory and simulating different outcomes of historical or social events.

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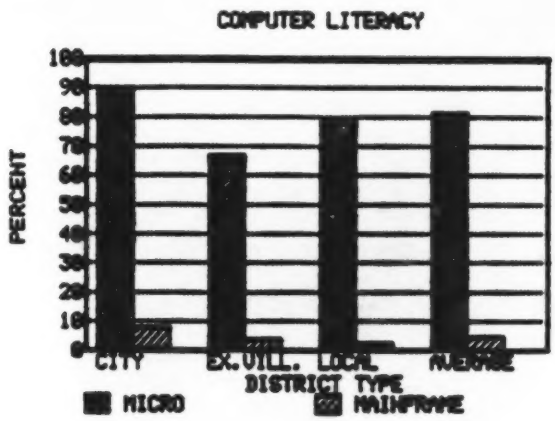

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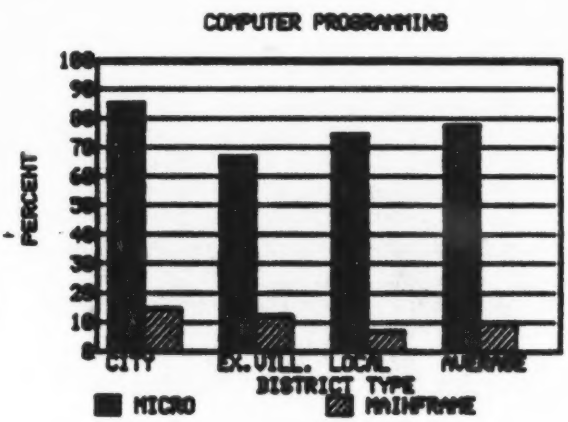

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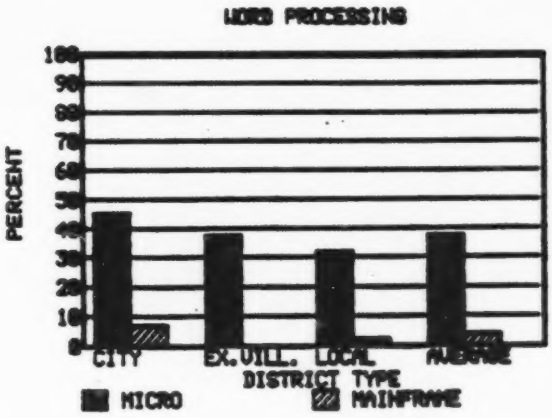

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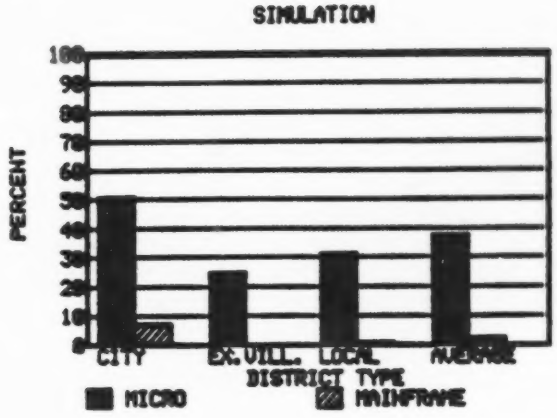

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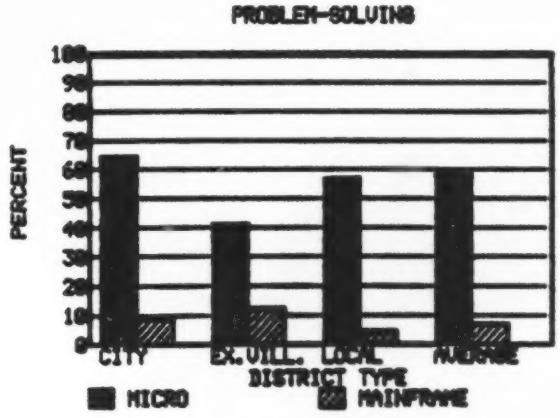

Results. Charts 7, 8, 9, 10, and 11 illustrate the survey results by district type for computer-based learning activities. The charts show that a very high percentage of the districts reported that microcomputers are being used for instruction in computer literacy and for teaching computer programming. Over 90% of the city districts reported using micros for computer literacy while 86% of the cities use them for teaching computer programming. Two-thirds of the exempted village districts and over three-fourths of the local districts use micros for these same two activities.

Nearly 60% of the districts reported using microcomputers for problem-solving activities and about 38% of the districts reported using micros for teaching word processing and for simulations. While the microcomputer as opposed to the mainframe computer is again overwhelmingly used for these instructional kinds of activities, 10% of the districts did report using their mainframes for teaching computer programming. This particular type of use is more likely at the secondary level where students have access to the district's mainframe through the use of remote terminals.

Another breakdown of the computer-based learning results (Appendix B, p. 2) showed a strong relationship between district size and use of the computer for these types of activities. The highest uses for all size districts are for computer literacy (82.2%) and computer programming (78.2%). Microcomputers are being used significantly more than mainframes for all CBL activities although 17% of the large districts use the mainframe for teaching computer programming.

However, analysis of the CBL results by per pupil expenditure of the responding districts (Appendix C, p. 2) showed a much more even distribution of use for these functions. High, middle and low PPE districts reported nearly equivalent usage for literacy and programming but a higher percentage of the high PPE districts reported use for word processing and problem-solving activities.

In general, it can be said that district use of computers for computer-based learning activities is more closely related to district type and size and less to their per pupil expenditure. Microcomputers are used much more than mainframes for these kinds of activities.

Student Academic Records

Background. The next part of the survey asked respondents to check the types of instructional support tasks for which microcomputers and mainframes are used in their districts. The first category of such tasks on the survey was the maintenance of student academic records including grade reports, classroom test scores, class rank reports, and transcripts. Districts are increasing their use of computers to maintain and produce reports of students' grades for permanent records at the school and district levels and to send home to parents. Computerized grade reporting usually means purchasing a software package written especially for the purpose. In larger districts, a special grade reporting program may need to be written because of the scope or complexity of the grading system. However, in most cases, published software packages for grade reporting can be modified to meet the particular needs of the school district.

Maintenance of classroom test scores on a computer is a task that will undoubtedly receive increased interest from teachers in the future. There are a number of published "grade book" programs available for microcomputers that will keep a teacher's entire grade book including test scores, quiz grades, and marks for papers or special projects. Most of these programs will compute class averages for each test and also allow the teacher to weight the various grades in computing a final grade.

Maintaining standardized test scores on a school district computer is usually done by obtaining a tape or disk containing the test item raw data and standardized student scores from the test publisher. The publisher scores the students' answer sheets and provides printed reports summarizing the results by student, class grade, and school. The school district can use the raw data or standard scores to do more in-depth analyses of their students' achievement on the test.

Keeping class rank reports and student transcripts on a district computer can greatly facilitate the production of these reports. While most districts presently keep such records on a central computer, large districts with a number of high schools may eventually find it more efficient to have each high school keep its own reports on a microcomputer at the school, and send and receive data from the district's central computer on a regular basis.

"Use of the computers for maintenance of student records is associated with size and financial status of the school districts but not with the type of district."

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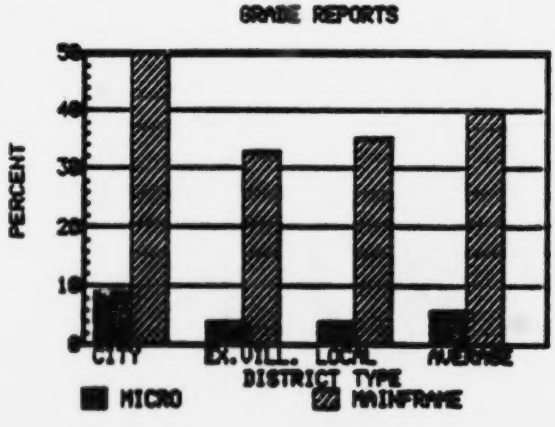

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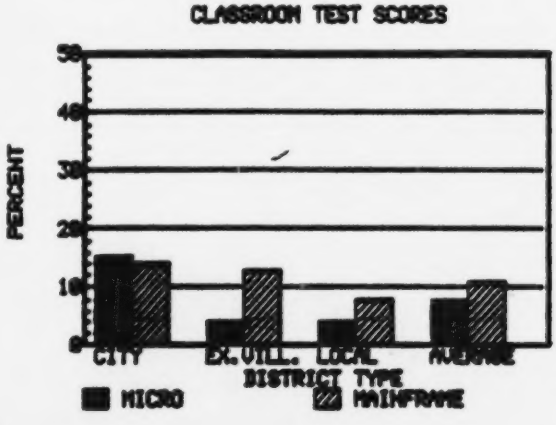

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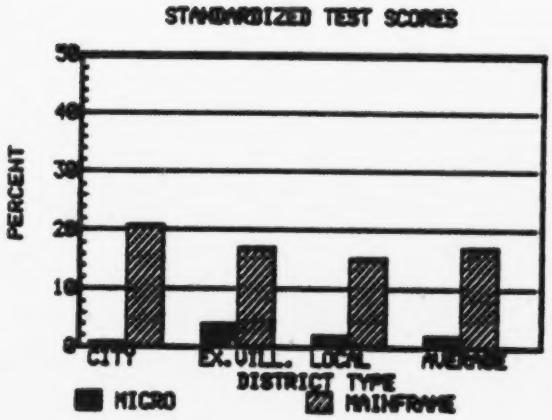

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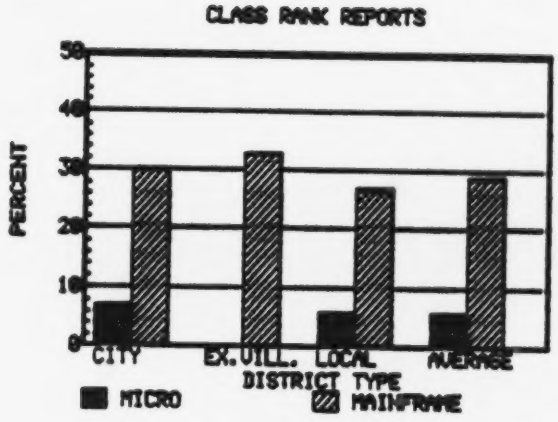

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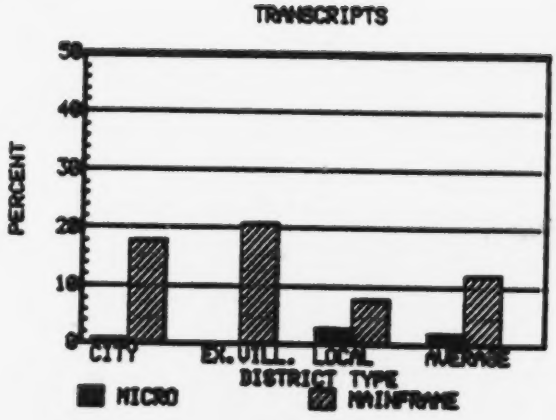


Results. The survey results for maintaining student academic records on the computer showed that districts generally use their mainframe computer more than micros for these tasks, probably because of the greater processing and storage capacities of the larger machines. Charts 12-16 show the results for student academic records. (Note the change in scale from 100% to 50%.) Forty percent of the districts keep student grade reports on a mainframe computer and about 29% keep class rank reports on their mainframes. However, only 17% of the districts reported keeping their students' standardized test scores on a mainframe. Since these types of reports are usually prepared by the particular testing publisher, perhaps most districts keep such information in print rather than electronic form. The breakdown by district type showed a mixed pattern of usage with city use of computers for grade reporting (50.4%) the only significant result.

Analysis of the results by size of district (Appendix B, p. 3) showed that nearly twice as many of the large districts use the computer for student record keeping as do middle and small size districts. Nearly 60% of the large districts use the mainframe for grade reporting. Analysis by per pupil expenditure (Appendix C, p. 3) showed increased use of computers for maintaining student records with higher levels of per pupil expenditure.

In general, use of the computers for maintenance of student records is associated with size and financial status of the school districts but not with the type of district. While the number of districts keeping student academic records on a microcomputer is low, it is likely to increase as more microcomputer software for these purposes becomes available.

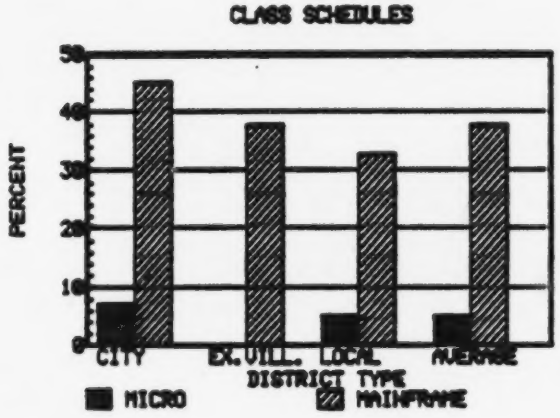
Student Non-Academic Records

Background. The second type of instructional support tasks on the survey was the maintenance of student non-academic records. These records include class schedules, attendance/absence data, IEP records for handicapped students, guidance records, health/immunization records, and psychological test results.

The two applications for which some published software is available in this area are class scheduling and attendance accounting. Programs for doing class scheduling are available for both the micro and mainframe although those for the microcomputer usually require an extra storage device to handle the large amount of data necessary in a secondary school situation. Attendance accounting programs are becoming more popular for microcomputers since the data can be analyzed and reported daily at the school site and also summarized into quarterly reports.

The other types of student non-academic records can usually be kept as part of a generalized student data base on a micro or mainframe computer. There are a number of student record packages available for both types of computers but larger districts may find it necessary to have one modified or even custom-written to meet their needs.

17.



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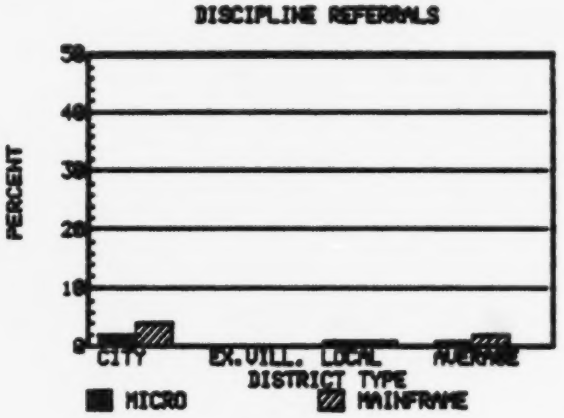

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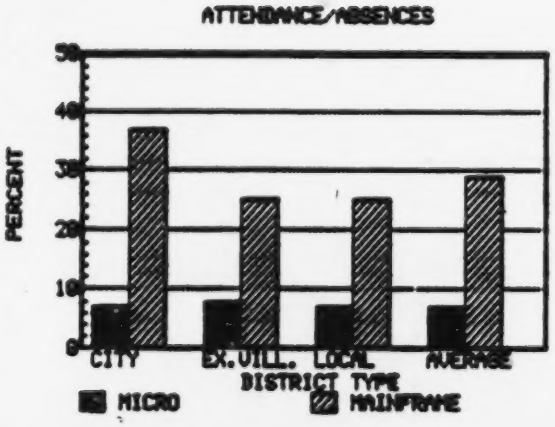

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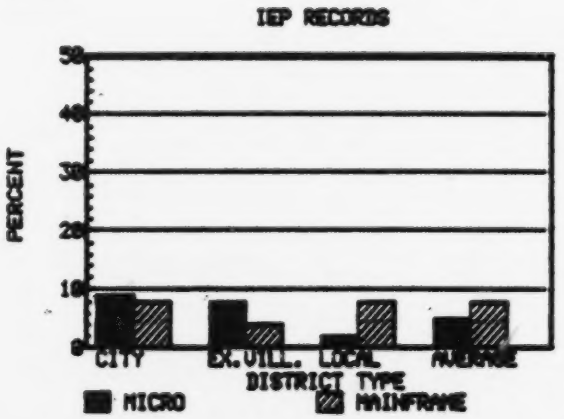

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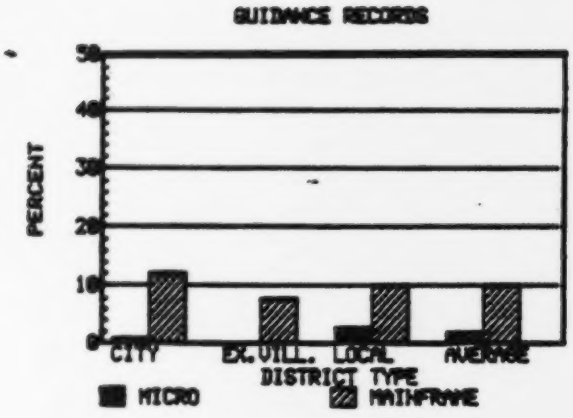

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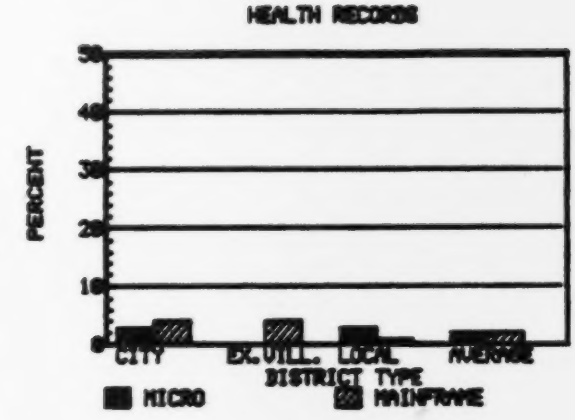

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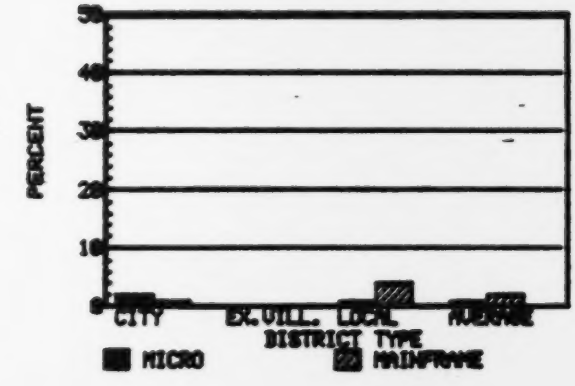


Results. The survey results illustrated in Charts 17 through 23 show that, except for scheduling and attendance, the number of districts using the computer for keeping non-academic records is much lower than for academic records. Districts which do so tend to use mainframes rather than micros for such tasks. An average of 37.8% of the districts reported doing class scheduling on a mainframe computer and 29% keep attendance data on their mainframe. However, more city and exempted village districts reported keeping IEP records of handicapped students on micros than on mainframes.

District size (Appendix B, p. 3) was associated with use of the computer for maintaining non-academic data. Over 56% of the large districts use it for class scheduling and 46.4% use it for keeping attendance/absence data. Districts with higher per pupil expenditure (Appendix C, p. 3) also tended to show higher use of the computer for scheduling and keeping attendance data.

In summary, maintenance of non-academic records was associated with size and financial status of the responding districts. City districts showed higher use of computers for scheduling and attendance data. Increased recognition of the capabilities of the computer for maintaining and processing these types of information should result in increased use of the computer for these applications in the future.

Cable and Broadcast Television

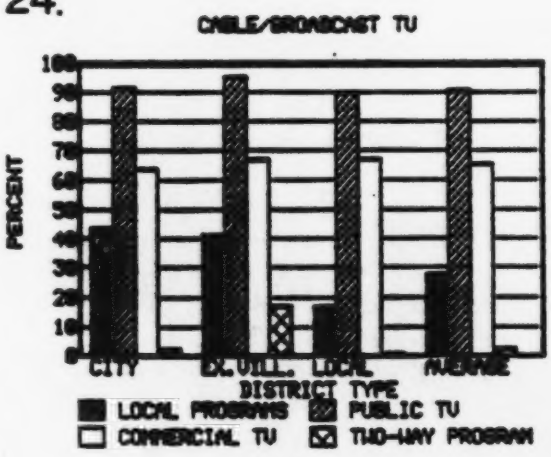
Background. The next part of the survey gathered information on the use of educational technology other than computers for instruction and instruction-related purposes. The first category of such technologies was cable and/or broadcast television. For many years school districts have been using the programs supplied by the national and Ohio public television networks as supplements to their instructional programs. As more and more district communities use cable televison for instruction, the quality of the television signal should improve and the quantity of educational programming should increase.

Some districts are producing more of their own programming for use in their classrooms using studios in their area vocational schools or the local public television station. Since cable television companies are usually required by their franchise agreement to provide a certain number of channels for access by local public agencies, school systems can soon look forward to having their own television "network." Not only will schools be able to receive programming from a central studio, but they will also be able to transmit programs to one another via cable.

While many districts are using television for instructional purposes, they are also beginning to explore its uses for other instruction-related applications as well. These include staff training, parent and community information, and administrative bulletins and communications. Cable and broadcast television are especially suited to training of teachers where inservice tapes or films can be telecast at different times depending on school schedules. In addition, some school districts are producing their own staff training programs by taping or filming exemplary teachers in their classrooms.

With the increasing availability of public access channels provided by cable franchises, school districts are also able to produce informational programming for their parents, communities, and staff. The closed network provided by cable links to all the schools in the district increases the likelihood that meetings for administration may soon be held by television. Especially promising is the advent of two-way interactive programming that allow training participants to respond and react to the information being presented.

24.

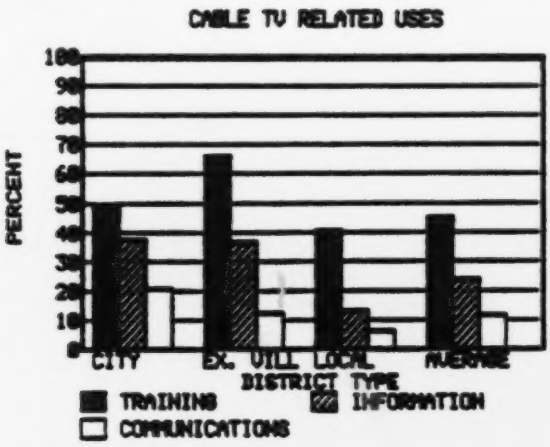


Results. Chart 24 shows that a high percentage (91%) of the districts use public television programs for classroom instruction and that nearly two-thirds of the districts also use commercial programming for instruction. Better than 40% of the city and exempted village districts reported doing locally-produced programming for instruction but only 17% of the local districts reported such usage.

A breakdown of these results by district size (Appendix B, p. 4) showed that districts were fairly even in their use of public and commercial television for instruction but that larger districts tended to use more locally-produced programs than did smaller districts.

An analysis of the results by per pupil expenditure of the districts (Appendix C, p. 4) indicated that middle and high PPE districts reported slightly more use of locally-produced programs than low PPE districts. Higher PPE districts use commercial programming somewhat less than lower PPE districts. All three types of districts were relatively equal in their use of public television programs.

25.



For instruction-related uses of cable and/or broadcast television (Chart 25), 46% of the districts reported doing staff training via these media with an exceptionally high percent (67%) of the exempted villages reporting this particular usage. The results also show that a high percentage of city and exempted village districts (38%) use television for broadcasting parent/community information.

Larger districts (Appendix B, p. 5) showed a greater tendency to use television for these instruction-related purposes; over half of the large districts use TV for staff training, and nearly 40% use it for parent and community information.

In a reversal of other findings from the survey, districts with the lowest per pupil expenditure (Appendix C, p. 5) reported the highest use of TV for staff training; over half of them reported using television for training. On the other hand, the middle PPE districts showed the highest use of TV for parent information and administrative bulletins and communications.

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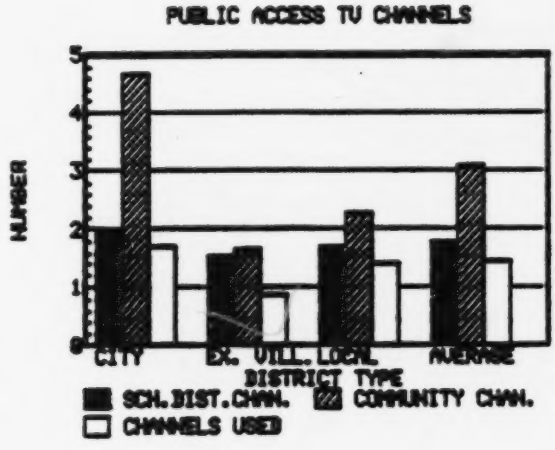
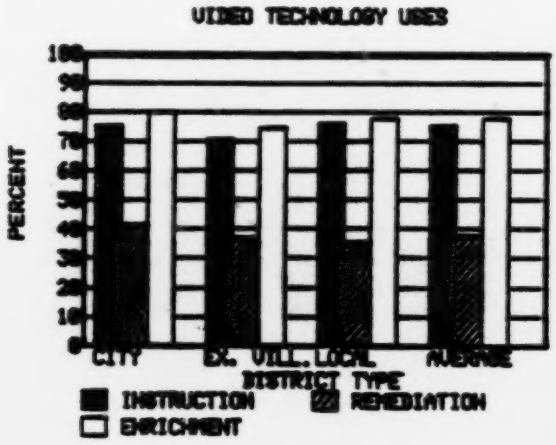


Districts were asked to indicate the number of public access cable channels that had been allocated for school district use. The results show that city districts have the highest number of community channels available but that less than half are allocated for school use. Smaller districts reported nearly as many public access channels allotted to their school districts as did large districts; however, small districts reported a higher number of such channels in use. High PPE districts showed the highest number of community channels and the greatest usage of them.

27.

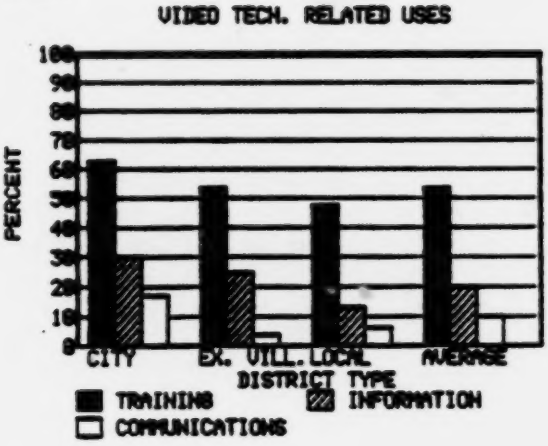


Video Technology

Respondents were also asked to indicate how other types of technology, such as video cassettes, videodiscs, and videotape recordings, are being used in their districts for instructional purposes. The results shown in Chart 27 indicate that more than 75% of the districts reported using these types of technology for basic instruction and enrichment activities. About half that percentage (37%) use them for remediation.

Although districts of different size were fairly uniform in their use of video technology for basic instruction (Appendix B, p. 5), there was a tendency for large districts to report higher use for remediation and enrichment. While districts differing in per pupil expenditure were also fairly equal in use for basic instruction and remediation (Appendix C, p. 5), there was a tendency for lower PPE districts to use video technology for enrichment.

28.



For instruction-related purposes, over 54% of the districts reported using video recording technology for staff training, 20% for parent/community information, and 10% for administrative communications.

There was a marked tendency for large districts to use video technology for staff training; 66% of the high ADM districts reported such use. In addition, large districts tend to show higher use of video recording for parent and community information. Low PPE districts reported the highest use of video technology for staff training while middle PPE districts used it the most for parent/community information.

In general, the results for cable/broadcast television showed a high use of public and commercial programming with a significant number of districts originating their own programming. Instruction-related uses of cable/broadcast TV were related to size and type of district with exempted village and low PPE districts showing quite high usage for staff training.

The results for video recording technology showed a high percentage of the districts using it for instruction and enrichment but much less for remediation. Video recording technology is used extensively by city and large districts for staff training but lower PPE districts showed high use as well.

SECTION II

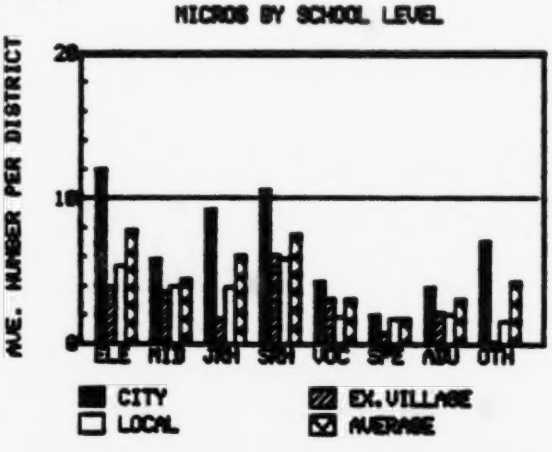
Program Development and Implementation

This section of the survey asked for a variety of information about technology program development and implementation in school districts. These data included the amount and kinds of computer equipment, funding sources, purchase policies, staff training provided, facilities, and program supervision.

Microcomputers by School Level

The first item in this section asked respondents to indicate the number of microcomputers in use at each school level. The results shown in Chart 29 indicate that most of the microcomputers are located in the elementary and senior high schools with somewhat fewer in the middle and junior high schools. This high number of elementary level computers is probably due to the greater number of schools at that level. The number at the middle and junior high school levels should increase with the new state standards encouraging computer literacy at those grade levels.

29.



The results shown in Chart 29 indicate that city districts reported the highest number of micros at all grade levels, in some cases over twice as many, on the average, as reported by the exempted village and local districts. These results are, of course, affected by the larger number of schools in city districts.

An analysis of the results by ADM (Appendix B, p. 6) shows that the number of microcomputers reported at most grade levels is related to the size of the district. Large districts reported nearly three times as many micros in use at the elementary grades, and over twice as many at the middle and junior high grades. A much higher number was also reported by the largest districts in vocational and special education.

Analysis of the results by per pupil expenditure (Appendix C, p. 6) showed a general trend for higher PPE districts to have more micros at all grade levels. For elementary, junior, and senior high grade levels, high PPE districts reported nearly twice as many micros on the average as did lower PPE districts. Differences were even more extreme for vocational and adult education with high PPE districts reporting nearly five times as many micros as districts with low per pupil expenditure.

Microcomputer Funding

The next item asked respondents to indicate the source of funding for microcomputers in their districts. The results shown in Chart 30 indicate most of the districts have purchased their micros with a fairly even balance of local and federal funds; state funds accounted for only about 5% of funding for micros. Exempted villages reported using more local funds and less federal funds to purchase micros while local districts showed the opposite pattern. It should also be noted that about 8% of the funding for micros has come from non-public funds, perhaps reflecting the volunteer efforts schools have used to raise money for purchasing microcomputers.

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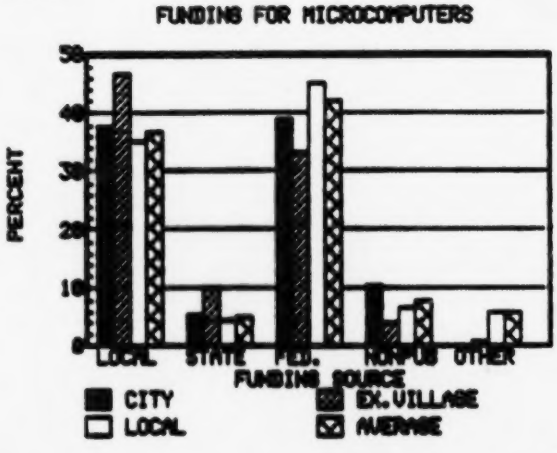


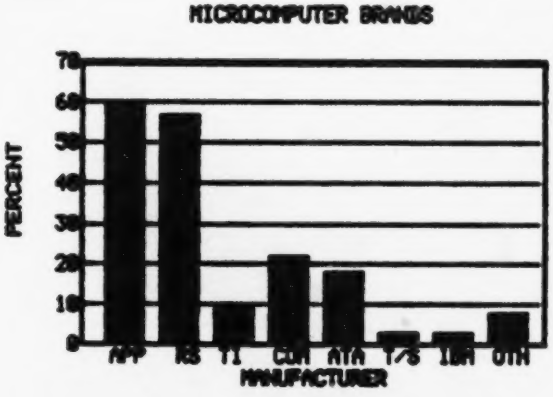
Size of district (Appendix B, p. 6) was not related to expenditure of local funds for micros but was related to use of federal funds with small districts using more federal monies for these purchases. Large districts tended to use more non-public funds for purchasing micros.

Districts with higher per pupil expenditure (Appendix C, p. 6) tended to use more local funds for purchasing micros while districts with lower PPE tended to use federal funds. However, more middle PPE districts reported using non-public funds than did the other two categories of districts.

Microcomputer Brands

The next item asked respondents to identify the brands of microcomputers being used in the district. The results shown in Chart 31 indicate that Apple and Radio Shack were close with about 59.5% and 57.4% of the districts reporting their use respectively. Lower percentages of the districts reported using Commodore/Pet (22.4%) and Atari (17.8%) with the other responses distributed among Texas Instruments, Timex/Sinclair, IBM and other microcomputer brands.

31.



Analysis of brand usage by type of district (Appendix A, p. 6) shows that a high percent of the city districts use the Apple (77%) and Radio Shack (67%) micros while closer to half of the exempted village and local districts report using those two brands.

In general, the largest districts reported using more Apple and Radio Shack microcomputers (Appendix B, p. 6). For instance, over twice as many of the large districts use the Apple Computer as do the small districts. Middle size districts reported the highest use of Atari computers.

Per pupil expenditure of the districts (Appendix C, p. 6) was not as highly related to the brands of microcomputer they use. The districts were relatively even in their use of the two top brands, Apple and Radio Shack, with low PPE districts showing somewhat less use of these two brands. Low PPE districts did report the highest use of the Commodore/Pet and Atari brands.

Purchase Policies

The next part of the survey asked respondents about their purchase policies regarding microcomputers. Ninety-four percent of the districts indicated that they have purchased their microcomputers rather than use any lease/rental arrangements (Appendix A, p. 7). There were no significant differences in purchase policies among the districts for either size or per pupil expenditure (Appendixes B, p. 7 and C, p. 7).

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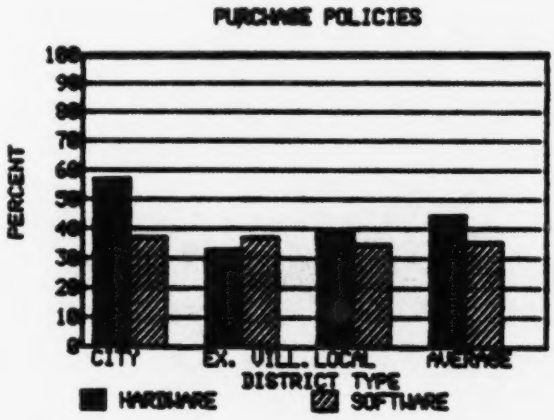

Forty-five percent of the districts indicated that they have a formal process for purchasing microcomputer hardware with city districts, larger districts and districts with the highest per pupil expenditure most likely to have such policies in effect (Appendixes B, p. 7 and C, p. 7).

About 36% of the districts have a formal process for approving purchase of microcomputer software in their districts. There were no significant differences among district types for software purchase policies but large districts and those with higher per pupil expenditures were more likely to have such policies in effect (Appendixes B, p. 7 and C, p. 7).

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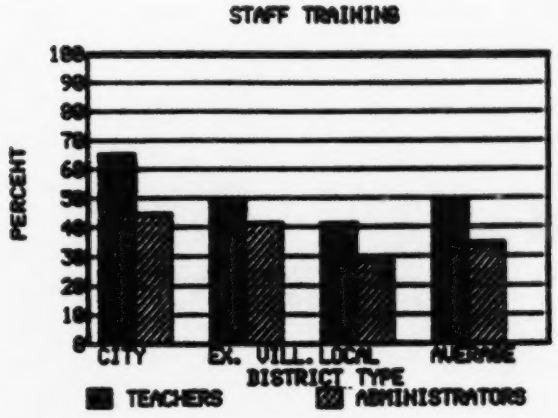


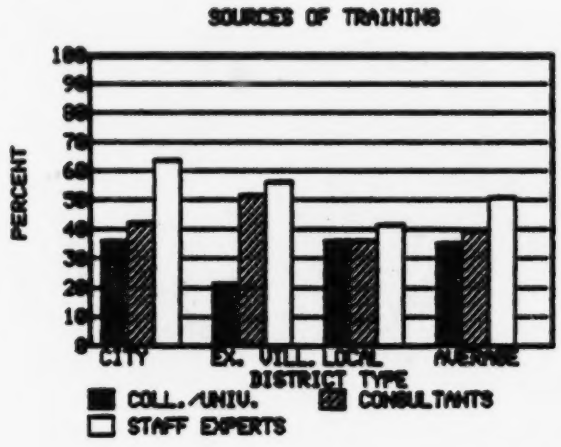
Staff Training

Half of the districts indicated that they have a formal program for training teachers and about 35% have a formal program for training administrators in the use of microcomputers. A higher percentage of the city districts reported having formal training programs for both groups.

Larger districts and those with the highest per pupil expenditure were more likely to have training programs for teachers and admininstrators. Over 65% of the high ADM districts and 61.1% of the high PPE districts reported having training programs for their teachers (Appendixes B, p. 7 and C, p. 7).

"Half of the districts indicated that they have a formal program for training teachers in the use of microcomputers."

34.



Sources of Training

Over half the districts expected using experts on their own staffs as sources of training. Better than a third of the districts use local colleges and universities or other outside consultants. Sixty-four percent of the city districts use staff experts for training; over half of the exempted village districts use outside consultants.

Use of these training sources was related to size of the districts with high ADM districts using all three sources the most. Large districts (66.1%) and high PPE districts (61.9%) tend to use experts on their own staffs for training significantly more than do the other districts (Appendixes B, p. 7 and C, p. 7).

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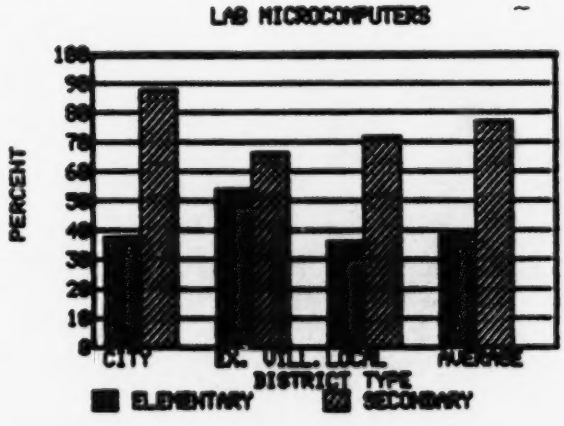

Program Organization

Survey respondents were asked to indicate the facilities for or location of the microcomputers in their elementary and secondary schools. Chart 35 shows that about 77% of the districts have micros in self-contained "labs" at the secondary level while only 38% have them in labs at the elementary level. City districts, large districts, and those with high per pupil expenditure were most likely to have their micros in labs at the secondary level (Appendixes A, p. 8, B, p. 8, and C, p. 8).

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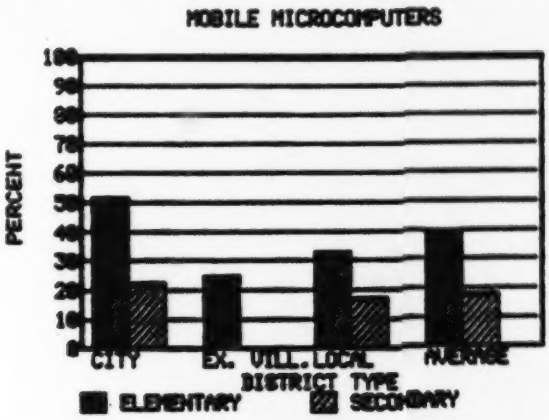

Almost 40% of the districts have micros on a mobile schedule in their elementary schools while only 17% use micros in this way at the secondary level. High ADM districts reported a greater tendency to have their micros on a traveling schedule in their elementary buildings. Districts with higher PPE were more likely to have their micros in labs at both the elementary and secondary levels. Less than 10% of the districts indicated that they have micros in most district classrooms.

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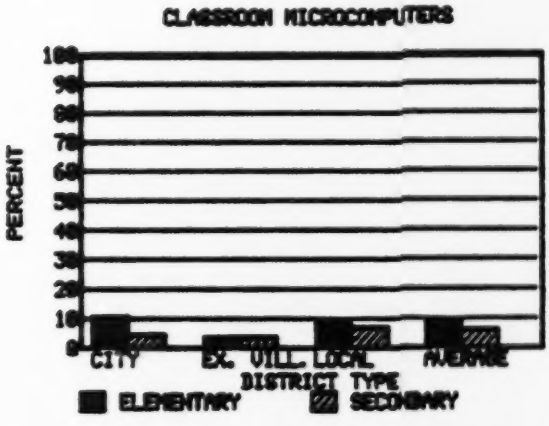
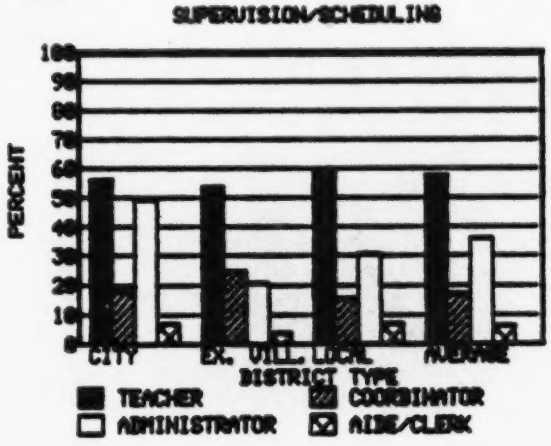


Survey respondents were also asked to indicate how their microcomputer program is supervised or scheduled. Fifty-eight percent said that supervision is done by an individual teacher while another 37% said it is handled by an administrator. Nearly 18% of the districts indicated their program is handled by a computer program coordinator. Nearly half of the city districts indicated that their program is supervised by an administrator while 25% of the exempted villages said supervision is done by a program coordinator. Larger districts reported a significantly higher tendency to have an administrator in charge of their program while districts with higher per pupil expenditure were more likely to have a computer program coordinator (Appendixes B, p. 8 and C, p. 8).

"...55% of the districts indicated that they belong to a local or regional computer consortium of districts."

38.



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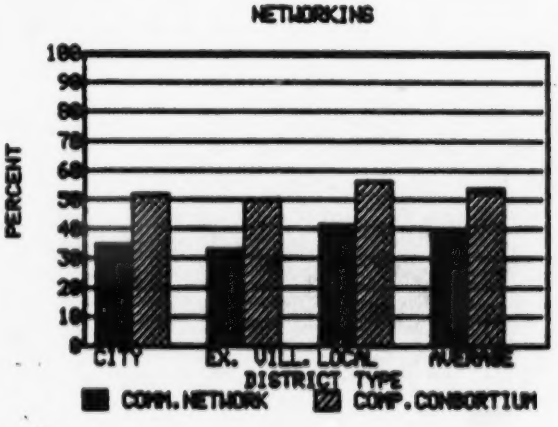
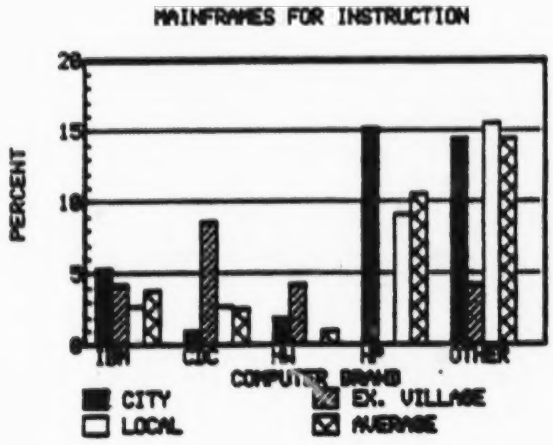


Nearly 39% of the districts said that they participate in local or regional communication networks for microcomputers and 55% indicated that they belong to a local or regional computer consortium of districts. Districts of middle size and per pupil expenditure were more likely to belong to a local or regional network while districts with higher per pupil expenditure were more likely to belong to a computer consortium (Appendixes B, p. 8 and C, p. 8).

40.



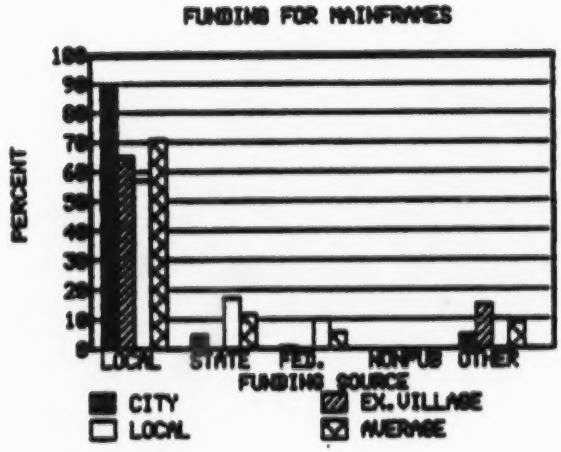
Mainframe Computers

The next part of the survey asked questions regarding the types of mainframe computers used for instruction. The results shown in Chart 40 indicate that of the types of mainframes used for instruction, about 11% of the districts use Hewlett Packard equipment with small percentages using IBM, Control Data, or Honeywell. About 14% use other brands of large computers for instruction.

City districts, large districts, and those with high per pupil expenditure tended to use Hewlett Packard the most with IBM equipment second. Small districts reported more use of Control Data mainframes for instruction (Appendixes B, p. 9 and C, p. 9).

Nearly 20% of the districts indicated that they have purchased their mainframes. Larger districts and districts with higher per pupil expenditure were more likely to purchase their mainframes or use lease/rental arrangements (Appendixes B, p. 9 and C, p. 9).

41.



About 71% of the districts indicated that they have used local funds to purchase their mainframe computers with about 12% using state funds and about 9% using other funds. A high percent (89.3%) of the large districts used local funds for purchasing mainframes while smaller districts used state or federal funds. Districts with middle to high per pupil expenditure reported a much greater use of local funds for mainframe purchases while low PPE districts showed a higher tendency to use special federal funds (Appendixes B, p. 9 and C, p. 9).

SECTION III

Problems and Benefits of Educational Technology

In this section of the survey, respondents were asked to rate a number of items regarding the problems and benefits associated with the use of technology in their districts. The results for the problem items are shown in Table 1 and indicate that too few hardware units is seen as the top problem by most school districts. Also highly rated as problems were the lack of adequately trained staff, lack of understanding of the capabilities of technology, and lack of software. In general local districts gave the highest rating to these items. Lower rated items included increase in costs and time, technology-imposed constraints, equipment repair/maintenance, and incompatibility of software and hardware. The different district types were fairly uniform in their rating of these items. Lowest rated items were those on staff and students' dissatisfaction, and decrease in student motivation/achievement.

When the problem item ratings were analyzed by size of the districts, few sharp differences were found. The larger districts gave a higher rating to the lack of hardware item, while the smaller districts gave higher ratings to the lack of staff training and understanding of technology, and lack of adequate software.

Table 1

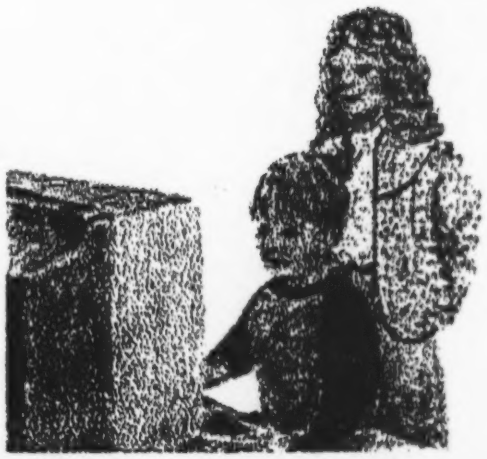
Problems Associated With Use of Educational Technology

1 = No Problem 5 = Major Problem

Item	City	Exempted Village	Local	Average
1. Too few units of hardware available	3.98	4.22	4.03	4.03
2. Staff not adequately trained	3.50	3.63	3.76	3.66
3. Lack of understanding of technology capabilities	3.40	3.50	3.70	3.58
4. Lack of adequate software/programming	3.24	3.40	3.63	3.48
5. Hardware/software manuals not written with average user in mind	2.71	2.84	2.67	2.70
6. Implementation actually increased cost of performing function	2.19	2.27	2.41	2.32
7. Repair/maintenance of equipment	2.28	2.10	2.17	2.21
8. Technology-imposed constraints/inflexibility	2.04	2.16	2.09	2.08
9. Incompatibility of software/hardware with that previously used	1.94	2.05	1.96	1.96
10. Increase in time spent on routine tasks	1.76	1.75	1.77	1.76
11. Staff dissatisfaction	1.69	1.57	1.64	1.65
12. Decrease in student motivation/achievement	1.25	1.33	1.28	1.27
13. Student dissatisfaction	1.26	1.38	1.23	1.25

The districts were also quite uniform in their ratings when the results were analyzed by per pupil expenditures of the districts. Lack of staff training was more highly rated as a problem in the low PPE districts while high PPE districts gave a higher rating to the technology-imposed constraints item.

These results indicate that lack of hardware, inadequate preparation on the part of staff, poorly written software, and inadequate documentation for both software and hardware are seen as the main problems by Ohio school districts in implementing educational technology. Problems with motivational or interest factors are least seen as problems.



"Lack of hardware, inadequate preparation on the part of staff, and poorly written software are seen as the main problems by Ohio school districts in implementing educational technology."

Table 2

Benefits Associated With Use of Educational Technology

1 = No Benefit 5 = Major Benefit

Item	City	Exempted Village	Local	Average
1. Improved student motivation for academic work	3.80	3.95	3.82	3.82
2. Improved parent/community attitudes toward use of technology in schools	3.71	3.94	3.63	3.68
3. Improved staff attitudes towards use of technology	3.60	3.90	3.43	3.53
4. Improved student comprehension of concepts taught by computer	3.40	3.44	3.50	3.46
5. Improved student achievement in basic skills from computer drill and practice	3.39	3.44	3.49	3.45
6. More efficient remediation of student deficiencies	3.45	3.57	3.25	3.35
7. More flexibility in programming instruction for classroom	3.08	3.18	2.97	3.02
8. Increase in efficiency in delivering instructional programming	2.98	3.29	2.87	2.94
9. Improved information on student achievement for teachers and parents	3.00	3.23	2.83	2.92
10. Improved record-keeping of student test scores, etc	3.06	3.23	2.75	2.90
11. Decrease in cost of delivering instructional programming	2.30	2.18	2.12	2.19

Survey respondents were also asked to rate a number of items regarding the benefits associated with use of technology in their districts. The results in Table 2 show that improved student motivation for academic work is seen as the greatest benefit. Closely related to it were improved parent, community, and staff attitudes toward the use of technology in the schools. Respondents also felt that technology has had beneficial effects on student achievement in both basic skills and comprehension of concepts. In addition, they felt that technology provided more effective remediation of student deficiencies in their academic work. Lower rated benefits items were those regarding increased efficiency and reduced cost for instruction, and improved record-keeping and information on student achievement for teachers and parents.

The three different types of districts gave fairly uniform ratings to the benefits items but exempted village districts generally gave the highest ratings while local districts gave the lowest. Large districts tended to give higher ratings to the items pertaining to more efficient remediation, improved record-keeping, and improved information for teachers and parents. Large districts also gave the highest rating to improved parent/community attitudes toward the use of technology in the schools.

Districts with high per pupil expenditure tended to give somewhat higher ratings to the improved parent information and improved record-keeping items. Middle PPE districts gave the highest rating to the item on improved parent and community attitudes while the lower PPE districts gave a high rating to the improved staff attitudes items.

These results indicate that school districts see the primary benefits of technology in terms of increased academic motivation and interest on the part of students, staff, and community with improved student achievement closely related as a benefit. Improved efficiency and reduced costs are seen as lesser benefits.

SECTION IV

Comments Regarding Educational Technology

In Section IV of the survey, respondents answered questions regarding the most positive and negative aspects of their technology applications, and were asked to describe their plans and recommendations for utilizing educational technology. These responses were summarized into general categories for each question.

A. Describe the most successful application of educational technology in your district.

With regard to the most successful application of educational technology, the responses of school districts fell into three categories: instructional use of computers; use of computers for student record keeping; use of educational television, cable television, and video cassette recorders (VCR).

By far, the most positive uses of educational technology reported were in the category of instructional uses. Computer literacy, computer programming, and computer assisted instruction were the three areas cited most often. Computer literacy was cited as the most successful application by 65 respondents. Of those, 17 identified their application at the elementary school level and three at the adult level. Forty-five identified no specific level of usage. Fifty-five districts felt that computer programming classes at all levels, but particularly at the high school level, were their most successful use of educational technology. Other areas of instruction mentioned were: remediation (22), improvement of basic skils (22), math classes (11), simulations (9), advanced mathematics (5), advanced science (5), drill and practice (4), gifted education (3), foreign language instruction (3), computer managed instruction (3), and tutorial (2).

Vocational and business education were cited as successful areas by 29 districts. Word processing (15) and data processing (12) were the most often mentioned applications of computers in this area.

Student record keeping by computers was the next most often stated response as a successful application of educational technology. Districts further broke this category into such areas as grade reporting, scheduling, attendance, testing, and guidance.

The use of television as a successful application was divided into three areas: educational television (35), use of videotapes and VCR's (26), and cable television (5).

B. What is the most negative aspect of your district's use of educational technology?

The responses to the most negative aspect of the use of educational technology in a district fell into two categories—finances and personnel. Financing the purchase of equipment was a major problem for 141 districts. This was manifested in a concern for lack of equipment, particularly computers and computer software, and a lack of appropriate facilities for the use of such equipment.

Personnel presented problems from two perspectives. Teacher reluctance to use technology and a lack of trained and knowledgeable staff were both seen as problem areas. This lack of properly trained staff led to an improper and insufficient use of educational technology. The most often stated misuse was a lack of relevance to class content.

Fifteen districts felt that a lack of proper planning was the most negative aspect of the use of technology in their districts.

C. What is the most positive result of your district's use of educational technology?

The most positive result of the districts' use of educational technology was stated in relation to student, teacher, parent, and community enthusiasm and motivation. Ninety-two districts stated that the use of technology—especially computers —created support and enthusiasm for the particular application and also for the school system in general. Eighty-nine districts stated that such usage provided motivation and interest in learning for both teachers and students.

Other districts reported that students benefitted from a broadened instructional base (10), enhanced job opportunities (9), improved achievement (6), and improved thinking skills (3).

D. What future plans do you have for using additional educational technology in your district?

With regard to future plans for the use of educational technology, most responses fell into three categories: planning, implementation and/or expansion of programs and facilities, and purchase of equipment. Thirty-seven districts said that they will be planning further computer usage or purchase. Seventy-five districts will purchase microcomputers. Seventeen will purchase software. Course offerings will be initiated and/or expanded in 70 districts. Twenty-two will do the same with computer facilities. Twenty-one districts will initiate and/or expand staff training and add staff.

Another area receiving multiple responses for future use was the utilization of computers in school and instructional management (15). Twenty-nine districts reported an expanded use of cable television and educational television and the use of VCR's in their future plans.

E. What recommendations do you have for other school districts interested in the technology applications (computers or TV) similar to those in your district?

Recommendations for the use of educational technology fell into two categories: planning and implementation of programs, and purchase of equipment. Seventy-nine districts advised an organized approach based on a committee-produced long range plan for the use of educational technology. Such a committee should involve all segments of the school and community. This committee should produce a plan that outlines the goals and objectives for using educational technology. The committee ought to address itself to purchase of equipment as well as to pertinent courses of study.

A further step is staff orientation and training advised by 37 districts. As part of this planning process, 24 districts recommended research and visits to districts with successful programs. Three districts recommended hiring a consultant and five suggested the appointment of a knowledgeable coordinator.

With regard to purchasing equipment, ten districts advised careful evaluation of both hardware and software. Seven advised keeping equipment compatible while three others recommended buying different brands of equipment. Twenty-four districts said to go slowly but ten said, "Don't wait!"

SUMMARY

The major findings of the survey were as follows:

1. Ohio school districts are making overwhelming use of microcomputers rather than mainframe computers for direct instructional activities such as drill and practice, computer literacy, and computer programming.

2. City districts, large districts, and districts with higher per pupil expenditure show the highest usage of microcomputers for instructional activities. However, it should be noted that the differences between high and low PPE districts for computer-based learning activities were not as sharp as were the differences on the basis of district type and size.

3. For computer-managed instructional activities such as student testing and instructional-prescription, the districts showed more equal use of micros and mainframes. In general, use of computers for CMI applications was low compared to that for CAI applications.

4. School districts showed higher use of mainframes than micros for maintaining student academic and non-academic records. Grade reports, class schedules, and attendance/absence records were the most common uses. Again, city districts, large districts, and high PPE districts showed the highest use of these instructional support applications.

5. Over ninety percent of the districts are making use of public television and nearly two-thirds are using commercial television programming in their schools. Twenty-eight percent of the districts reported originating their own programming for instructional television.

6. For instruction-related uses of cable/broadcast TV, exempted village districts showed highest usage for training purposes. Large districts reported significantly more use of TV for training. However, in an exception to other findings, low PPE districts also showed the highest use for training purposes.

7. Districts showed about equivalent use of video recording technology for instruction and enrichment regardless of district type, size, or financial status. Districts reported using video technology primarily for training, with city and large districts showing the greatest usage for this purpose.

8. The number of microcomputers reported by school level was highest at the elementary and senior high levels and lower at the middle and junior high grade levels. This result is a function of the greater number of elementary schools in districts, and is confirmed by the fact that large districts also showed the highest number of micros at the elementary level. At all school levels, districts with the highest per pupil expenditure showed the greatest number of microcomputers.

9. Districts reported using primarily local and federal funds for purchasing microcomputers with other funding coming from state and non-public sources. Exempted village and high PPE districts were more likely to rely on local funds while small districts, locals, and low PPE districts tended to use federal funds.

10. Apple and Radio Shack are the two brands of microcomputers reported in use by the most number of districts. City districts and large districts were the greatest users of nearly all brands of micros. Districts were relatively even in their use of the various brands when compared by per pupil expenditure.

11. Forty-five percent of the districts reported having a formal process for approving hardware purchases and about 36% have a formal process for software purchases. City districts, large districts and districts with high per pupil expenditure were more likely to have such purchase policies.

12. Half the districts reported having a formal training program for teachers in use of microcomputers and about 35% have formal training for administrators. Again, city, large, and high PPE districts were more likely to have such programs.

13. Districts were most likely to use experts on their own staffs for training with city, large, and high PPE districts more likely to use such persons. Districts showed about equal usage of local colleges and universities and other outside consultants for training.

14. Districts were more likely to have their micros in labs at the secondary level and to have mobile scheduling of micros at the elementary level. Less than ten percent of the districts reported having micros in regular classrooms.

15. Small districts and local districts were more likely to have their computer programs coordinated by a teacher or program coordinator while large and city districts tended to use an administrator for program supervision. High PPE districts were more likely to have a program coordinator in charge of their program.

16. About 55% of the districts reported participating in a local or regional computer consortium; about 39% said they belonged to a local or regional communications network. Local districts and those with high PPE were more likely to participate in such consortia or networks.

17. For those districts using mainframes for instructional activities about 11% reported using the Hewlett-Packard. This usage was primarily by city and high PPE districts; a number of the exempted village districts reported using the Control Data mainframe.

18. Major problems reported by districts in the implementation of educational technology included the lack of enough hardware units, lack of adequate software and the inexperience of staff. The districts were relatively uniform in their ratings of these items regardless of size, type, or financial status.

19. Major benefits associated with the use of technology were reported by school districts as being primarily in the motivational and attitudinal areas. Districts reported that students' academic attitudes improved, and that staff and parents had become more favorable toward the use of technology in the schools. Improvement in student achievement was also seen as a major benefit.

20. Districts reported that the most positive result of their use of technology was the introduction of microcomputers for the various types of instructional applications described previously. Their biggest concerns were around the areas of adequate financing and staff preparation. Districts anticipated doing more planning and expansion of their programs and purchasing more equipment in the future. They advised careful planning and research before implementing programs with special attention to compatibility of software and hardware.

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APPENDIX A

AVERAGE RESPONSES BY TYPE OF DISTRICT

TOTAL RESPONDENTS:	City	Exempted Village	Local	Average
	115	24	192	331

SECTION I. INSTRUCTIONAL USES OF EDUCATIONAL TECHNOLOGY.

A. Uses of Microcomputers or Mainframe Computers in School District Classrooms.

1. Computer-Assisted Instruction.

	City	Exempted Village	Local	Average
a. Drill and Practice.				
Micro	78.3%	45.8%	66.7%	69.2%
Mainframe	6.1	4.2	5.7	5.7
b. Tutorial				
Micro	65.2	41.7	44.8	51.7
Mainframe	4.3	4.2	1.6	2.7
c. Remediation				
Micro	73.0	45.8	56.3	61.3
Mainframe	3.5	4.2	3.1	3.3
d. Other				
Micro	10.4	8.3	12.0	11.2
Mainframe	3.5	0.	0.5	1.5

2. Computer-Managed Instruction.

a. Student Testing.				
Micro	17.4 %	4.2 %	9.9 %	12.1 %
Mainframe	10.4	8.3	9.9	10.0
b. Generation of Student Reports.				
Micro	26.1	0.	9.4	14.5
Mainframe	20.0	8.3	14.7	16.1

A. 2. Computer-Managed Instruction (Cont'd)

c. Development of Instructional Prescriptions.

	City	Exempted Village	Local	Average
Micro	13.0 %	4.2 %	6.3 %	8.5 %
Mainframe	4.3	0.	5.2	4.5

d. Other.

Micro	7.0	4.2	0.	2.7
Mainframe	0.9	0.	0.5	0.6

3. Computer-Based Learning.

a. Computer Literacy.

Micro	90.4 %	66.7 %	79.2 %	82.2 %
Mainframe	7.8	4.2	3.1	4.8

b. Computer Programming.

Micro	86.1	66.7	75.0	78.2
Mainframe	14.8	12.5	6.8	10.0

c. Word Processing.

Micro	46.1	37.5	33.3	38.1
Mainframe	7.0	0.	3.1	4.2

d. Simulation.

Micro	51.3	25.0	32.3	38.4
Mainframe	7.0	0.	1.0	3.0

e. Problem-Solving.

Micro	65.2	41.7	56.8	58.6
Mainframe	8.7	12.5	4.7	6.6

f. Other.

Micro	0.	4.2	1.6	1.2
Mainframe	0.	0.	0.	0.

B. Uses of Microcomputers or Mainframes in school district offices.

1. Maintenance of Student Academic Records.

	City	Exempted Village	Local	Average
a. Grade reports.				
Micro	8.7 %	4.2 %	3.7 %	5.5 %
Mainframe	50.4	33.3	35.1	40.3
b. Classroom test scores.				
Micro	14.8	4.2	4.2	7.9
Mainframe	13.9	12.5	8.4	10.6
c. Standardized test scores.				
Micro	0.9	4.2	2.1	1.8
Mainframe	20.9	16.7	14.7	17.0
d. Class rank reports.				
Micro	7.0	0.	6.3	6.1
Mainframe	30.4	33.3	26.7	28.5
e. Transcripts.				
Micro	0.9	0.	2.6	1.8
Mainframe	18.3	20.8	7.9	12.4
f. Other.				
Micro	4.3	4.2	3.7	3.9
Mainframe	7.0	0.	5.2	5.5

2. Maintenance of Student Non-Academic Records.

a. Class schedules.				
Micro	7.0 %	0. %	5.2 %	5.4 %
Mainframe	45.2	37.5	33.3	37.8
b. Attendance/Absences.				
Micro	7.0	8.3	7.3	7.3
Mainframe	37.4	25.0	24.5	29.0

B. 2. c. Discipline referrals.

	City	Exempted Village	Local	Average
Micro	1.7 %	0. %	1.0 %	1.2 %
Mainframe	3.5	0.	0.5	1.5

d. IEP records for handicapped students.

Micro	8.7	8.3	2.1	4.8
Mainframe	7.8	4.2	7.8	7.6

e. Guidance records.

Micro	0.9	0.	2.6	1.8
Mainframe	12.2	8.3	8.9	10.0

f. Health/immunization records.

Micro	2.6	0.	2.6	2.4
Mainframe	4.3	4.2	0.5	2.1

g. Psychological test results.

Micro	1.7	0.	0.5	0.9
Mainframe	0.9	0.	3.6	2.4

h. Other.

Micro	5.2	0.	3.1	3.6
Mainframe	2.6	0.	3.6	3.0

C. Uses of Cable and/or Broadcast Television in School District Classrooms.

1. Classroom Instruction.

a. Locally produced programs.

	43.5 %	41.7 %	17.1 %	28.0 %

b. Public television programs.

	92.2	95.8	89.6	91.0

c. Commercial television programs.

	64.3	66.7	67.4	66.3

d. Two-way interactive programming.

	2.6	16.7	1.0	2.7

e. Other.

	7.8	4.2	3.1	4.8

C. 2. Instruction-Related Uses.

	City	Exempted Village	Local	Average
a. Staff training.	49.6%	66.7%	41.1%	45.9%
b. Parent/community information.	38.3	37.5	13.5	23.9
c. Administrative bulletins/communications.	20.9	12.5	6.8	12.1
d. Other.	0.9	4.2	2.1	1.8

D. Video Technologies.

1. Classroom Instruction.

a. Basic instruction.	75.7%	70.8%	76.7%	75.9%
b. Remediation.	41.7	37.5	35.8	38.0
c. Enrichment.	80.0	75.0	77.7	78.3
d. Other.	4.3	4.2	4.1	4.2

2. Instruction-Related Uses.

a. Staff training.	63.5%	54.2%	48.4%	54.1%
b. Parent/community information.	30.4	25.0	13.5	20.2
c. Administrative bulletins/communications.	17.4	4.2	6.3	10.0
d. Other.	0.	0.	2.1	1.2

E. Public Access Cable TV Channels.

1. Number of public access channels allotted to school district.

1.96	1.57	1.72	1.80

2. Total number of public access channels available in community.

4.66	1.66	2.29	3.11

3. How many channels allotted to school district are in use?

1.70	0.85	1.39	1.46

SECTION II. PROGRAM DEVELOPMENT AND IMPLEMENTATION.

A. Microcomputers.

1. Number of Microcomputers at Each School Level.

	City	Exempted Village	Local	Total
a. Elementary	12.11	3.87	5.53	7.92
b. Middle	5.85	3.68	4.05	4.61
c. Jr. High	9.30	1.70	3.98	6.24
d. Sr. High	10.67	6.22	5.90	7.65
e. Voc. Educ.	4.38	3.20	1.92	3.15
f. Spec. Educ.	2.03	0.85	1.83	1.81
g. Adult/Cont. Educ.	3.94	2.25	2.10	3.12
h. Other	7.21	0.25	1.69	4.44

2. Sources of Funding for Microcomputers.

a. Local	37.8%	46.6%	35.0%	36.8%
b. Special state funds	5.6	10.2	4.3	5.1
c. Special federal funds	39.1	33.1	45.1	42.2
d. Non-public funds	10.5	4.2	6.9	8.0
e. Other	6.7	0.5	6.0	5.9

3. Brand(s) of Microcomputers.

a. Apple	77.4%	56.5%	49.2%	59.5%
b. Radio Shack	67.0	52.2	52.3	57.4
c. Texas Instruments	10.4	4.3	9.3	9.4
d. Commodore/Pet	27.0	30.4	18.7	22.4

(Cont'd)

3. Brand(s) of Microcomputers.

	City	Exempted Village	Local	Average
e. Atari	16.5%	13.0%	19.2%	17.8%
f. Timex/Sinclair	2.6	4.3	3.1	3.0
g. IBM	2.6	0.	3.1	2.7
h. Other	7.0	8.7	7.8	7.6

4. Type of Ownership of Microcomputers.

a. Purchase	96.5%	91.3%	93.3%	94.3%
b. Lease/Rental	4.3	0.	1.0	2.1
c. Other	2.6	0.	1.6	1.8

5. Purchase Policies.

a. Formal process for approving hardware purchases:

Yes . . .	57.4%	33.3%	39.4%	45.2%
No.	42.6	66.7	60.6	54.8

b. Formal process for approving software purchases:

Yes . . .	37.4	37.5	34.7	35.8
No. . . .	62.6	62.5	65.3	64.2

6. Staff Training.

a. Formal program for training teachers to use microcomputers:

Yes . . .	63.5%	50.0%	42.0%	50.0%
No. . . .	36.5	50.0	58.0	50.0

b. Formal program for administrators to use microcomputers:

Yes . . .	45.2	41.7	28.5	35.2
No. . . .	54.8	58.3	71.5	64.8

c. Sources of training:

1) Local colleges/universities

36.5%	21.7%	36.8%	35.6%

2) Outside consultants

42.6	52.2	36.8	39.9

(Cont'd)

6. Staff Training (Cont'd)	City	Exempted Village	Local	Average
c. Sources of training:				
3) Experts on staff	64.3%	56.5%	42.0%	50.8%
4) Other	9.6	13.0	9.8	10.0
7. Facilities/Location.				
a. Microcomputers kept in self-contained "lab" settings:				
Elementary	38.3%	54.2%	36.8%	38.6%
Secondary	87.8	66.7	72.0	77.1
b. Microcomputers travel on a schedule to building classrooms:				
Elementary	52.2	25.0	33.7	39.5
Secondary	22.6	0.	17.1	17.8
c. Microcomputers located in most classrooms:				
Elementary	11.3	4.2	8.8	9.3
Secondary	5.2	4.2	7.3	6.3
8. Supervision/Scheduling.				
a. Handled by:				
1) Individual teacher	56.5%	54.2%	60.1%	58.4%
2) Computer program coordinator	18.3	25.0	16.1	17.5
3) Administrator	49.6	20.8	31.1	36.7
4) Administrative aide or secretary/clerk	7.0	4.2	7.3	6.9
9. Networking.				
a. Does school district participate in local, regional or other communications network?				
Yes . . .	34.8%	33.3%	42.0%	38.9%
b. Does district belong to local, regional or other computer consortium?				
Yes . . .	52.2	50.0	56.5	54.5

B. Mainframe Computers.

1. Type of mainframe computer used for instruction.

	City	Exempted Village	Local	Average
a. IBM	5.4%	4.3%	2.7%	3.8%
b. Control Data	0.9	8.7	2.7	2.5
c. Honeywell	1.8	4.3	0.	0.9
d. Hewlett-Packard	15.3	0.	9.1	10.6
e. Other	14.4	4.3	15.6	14.4

2. Type of ownership.

a. Purchase	25.2%	18.2%	16.3%	19.6%
b. Lease/Rental	6.3	9.1	8.7	7.9
c. Other	6.3	0.	5.4	5.4

3. Source of funding for mainframe computers.

a. Local	88.66%	65.00%	57.54%	70.85%
b. Special state funds	5.38	0.	17.56	11.57
c. Special federal funds	0.76	0.	10.50	5.90
d. Non-public funds	0.	0.	0.	0.
e. Other	5.17	15.00	10.40	8.47

APPENDIX B

AVERAGE RESPONSES BY SIZE OF DISTRICT (ADM)*

TOTAL RESPONDENTS:	Low ADM	Middle ADM	High ADM	Average
	110	111	110	331

SECTION I. INSTRUCTIONAL USES OF EDUCATIONAL TECHNOLOGY.

A. Uses of Microcomputers or Mainframe Computers in School District Classrooms.

1. Computer-Assisted Instruction.

	Low ADM	Middle ADM	High ADM	Average
a. Drill and Practice.				
Micro	57.9%	68.8%	80.4%	69.2%
Mainframe	6.5	3.6	7.1	5.7
b. Tutorial.				
Micro	39.3	49.1	66.1	51.7
Mainframe	0.9	2.7	4.5	2.7
c. Remediation.				
Micro	51.4	59.8	72.3	61.3
Mainframe	2.8	1.8	5.4	3.3
d. Other.				
Micro	9.3	13.4	10.7	11.2
Mainframe	0.9	1.8	1.8	1.5

2. Computer-Managed Instruction.

a. Student Testing.				
Micro	11.3 %	8.0 %	17.0 %	12.1 %
Mainframe	5.7	7.1	17.0	10.0
b. Generation of Student Reports.				
Micro	11.3	12.5	19.6	14.5
Mainframe	6.6	15.2	25.9	16.1

* Range: Low ADM: less than 1474 Middle ADM: 1474-2892
High ADM: more than 2892

B. 2. Computer-Managed Instruction (Cont'd)

	Low ADM	Middle ADM	High ADM	Average
c. Development of Instructional Prescriptions.				
Micro	8.5 %	6.3 %	10.7 %	8.5 %
Mainframe	1.9	2.7	8.9	4.5
d. Other.				
Micro	0.	1.8	6.3	2.7
Mainframe	1.9	0.	0.	0.6
3. Computer-Based Learning.				
a. Computer Literacy.				
Micro	72.0 %	84.8 %	89.3 %	82.2 %
Mainframe	4.7	3.6	6.3	4.8
b. Computer programming.				
Micro	68.2	81.3	84.8	78.2
Mainframe	6.5	6.3	17.0	10.0
c. Word processing.				
Micro	33.6	29.5	50.9	38.1
Mainframe	1.9	2.7	8.0	4.2
d. Simulation.				
Micro	27.1	38.4	49.1	38.4
Mainframe	0.9	0.9	7.1	3.0
e. Problem-solving.				
Micro	50.5	60.7	64.3	58.6
Mainframe	3.7	3.6	12.5	6.6
f. Other.				
Micro	2.8	0.	0.9	1.2
Mainframe	0.	0.	0.	0.

B. Uses of Microcomputers or Mainframes in School District Offices.

1. Maintenance of Student Academic Records.

	Low ADM	Middle ADM	High ADM	Average
a. Grade reports.				
Micro	6.6%	4.5%	5.4%	5.5%
Mainframe	24.5	35.7	59.8	40.3
b. Classroom test scores.				
Micro	2.8	8.0	12.5	7.9
Mainframe	6.6	8.0	17.0	10.6
c. Standardized test scores.				
Micro	1.9	2.7	0.9	1.8
Mainframe	10.4	13.4	26.8	17.0
d. Class rank reports.				
Micro	7.5	7.1	3.6	6.1
Mainframe	21.7	25.9	37.5	28.5
e. Transcripts.				
Micro	3.8	0.9	0.9	1.8
Mainframe	7.5	8.9	20.5	12.4
f. Other.				
Micro	2.8	3.6	5.4	3.9
Mainframe	2.8	4.5	8.9	5.5

2. Maintenance of Student Non-Academic Records.

a. Class schedules.				
Micro	5.6%	5.4%	5.4%	5.4%
Mainframe	22.4	33.9	56.3	37.8
b. Attendance/absences.				
Micro	9.3	4.5	8.0	7.3
Mainframe	17.8	22.3	46.4	29.0

B. 2. c. Discipline referrals.

	Low ADM	Middle ADM	High ADM	Average
Micro	0.9%	0.%	2.7%	1.2%
Mainframe	0.	0.	4.5	1.5

d. IEP records for handicapped students.

Micro	2.8	4.5	7.1	4.8
Mainframe	4.7	7.1	10.7	7.6

e. Guidance records.

Micro	1.9	2.7	0.9	1.8
Mainframe	4.7	8.0	17.0	10.0

f. Health/immunization records.

Micro	1.9	2.7	2.7	2.4
Mainframe	1.9	0.9	3.6	2.1

g. Psychological test results.

Micro	0.	0.9	1.8	0.9
Mainframe	4.7	0.9	1.8	2.4

h. Other.

Micro	3.7	3.6	3.6	3.6
Mainframe	0.9	2.7	5.4	3.0

C. Uses of Cable and/or Broadcast Television in School District Classrooms.

1. Classroom Instruction.

a. Locally produced programs.

14.8 %	25.0 %	43.8 %	28.0 %

b. Public television programs.

89.8	89.3	93.8	91.0

c. Commercial television programs.

69.4	64.3	65.2	66.3

d. Two-way interactive programming.

1.9	3.6	2.7	2.7

e. Other.

2.8	3.6	8.0	4.8

C. 2. Instruction-Related Uses.

	Low ADM	Middle ADM	High ADM	Average
a. Staff training.	38.3 %	45.5 %	53.6 %	45.9 %
b. Parent/community information.	10.3	21.4	39.3	23.9
c. Administrative bulletins/communications.	4.7	8.9	22.3	12.1
d. Other.	1.9	2.7	0.9	1.8

D. Video Technologies.

1. Classroom Instruction.

a. Basic instruction.	77.8 %	74.1 %	75.9 %	75.9 %
b. Remediation.	31.5	37.5	44.6	38.0
c. Enrichment	73.1	78.6	83.0	78.3
d. Other.	3.7	4.5	4.5	4.2

2. Instruction-Related Uses.

a. Staff training.	40.2 %	55.4 %	66.1 %	54.1 %
b. Parent/community information.	9.3	19.6	31.3	20.2
c. Administrative bulletins/communications.	6.5	9.8	13.4	10.0
d. Other.	1.9	1.8	0.	1.2

E. Public Access Cable TV Channels.

1. Number of public access channels allotted to school district.	2.73	1.29	1.47	1.80
2. Total number of public access channels available in community.	3.09	2.75	3.43	3.11
3. How many channels allotted to school district are in use?	1.85	1.01	1.52	1.46

SECTION II. PROGRAM DEVELOPMENT AND IMPLEMENTATION.

A. Microcomputers.

1. Number of Microcomputers at Each School Level.

	Low ADM	Middle ADM	High ADM	Average
a. Elementary	4.02 %	4.87 %	13.61 %	7.92 %
b. Middle	3.34	4.02	6.76	4.61
c. Jr. High	1.93	2.77	11.34	6.24
d. Sr. High	4.11	6.24	12.26	7.65
e. Voc. Educ.	0.63	1.18	6.12	3.15
f. Spec. Educ.	1.38	1.70	2.16	1.81
g. Adult/Cont. Educ.	0.	0.60	5.35	3.12
h. Other	3.44	1.92	7.42	4.44

2. Sources of Funding for Microcomputers.

a. Local	35.08%	37.36%	37.96%	36.80%
b. Special state funds	4.68	5.77	5.07	5.18
c. Special federal funds	45.36	41.45	40.05	42.28
d. Non-public funds	6.58	7.73	9.87	8.05
e. Other	6.16	4.69	7.03	5.93

3. Brand(s) of Microcomputers.

a. Apple	38.0 %	62.2 %	77.7 %	59.5 %
b. Radio Shack	48.1	55.0	68.8	57.4
c. Texas Instruments	8.3	6.3	13.4	9.4
d. Commodore/Pet	17.6	27.0	22.3	22.4

(Cont'd)

3. Brand(s) of Microcomputers (Cont'd)

	Low ADM	Middle ADM	High ADM	Average
e. Atari	23.1 %	11.7 %	18.8 %	17.8 %
f. Timex/Sinclair	4.6	0.9	3.6	3.0
g. IBM	1.9	0.9	5.4	2.7
h. Other	6.5	9.9	6.3	7.6
4. Type of Ownership of Microcomputers.				
a. Purchase	92.6 %	95.5 %	94.6 %	94.3 %
b. Lease/Rental	1.9	0.9	3.6	2.1
c. Other	0.9	1.8	2.7	1.8
5. Purchase Policies.				
a. Formal process for approving hardware purchases:				
Yes . . .	38.0 %	42.0 %	55.4 %	45.2 %
b. Formal process for approving software purchases:				
Yes . . .	32.4	33.9	41.1	35.8
6. Staff Training.				
a. Formal program for training teachers to use microcomputers:				
Yes . . .	35.2 %	49.1 %	65.2 %	50.0 %
b. Formal program for administrators to use microcomputers:				
Yes . . .	24.1	36.6	44.6	35.2
c. Sources of training:				
1. Local colleges/universities	30.6 %	31.5 %	44.6 %	35.6 %
2. Outside consultants	39.8	36.0	43.8	39.9

(Cont'd)

	Low ADM	Middle ADM	High ADM	Average
6. Staff Training (Cont'd)				
c. Sources of training:				
3) Experts on staff	33.3%	52.3%	66.1%	50.8%
4) Other	10.2	8.1	11.6	10.0
7. Facilities/Location.				
a. Microcomputers kept in self-contained "lab" settings:				
Elementary	36.1%	46.4%	33.0%	38.6%
Secondary	67.6	75.9	87.5	77.1
b. Microcomputers travel on a schedule to building classrooms:				
Elementary	29.6	35.7	52.7	39.5
Secondary	16.7	17.0	19.6	17.8
c. Microcomputers located in most classrooms:				
Elementary	8.3	8.0	11.6	9.3
Secondary	9.3	7.1	2.7	6.3
8. Supervision/Scheduling.				
a. Handled by:				
1) Individual teacher	59.3%	60.7%	55.4%	58.4%
2) Computer program coordinator	16.7	18.8	17.0	17.5
3) Administrator	28.7	28.6	52.7	36.7
4) Administrative aide or secretary/clerk	5.6	5.4	9.8	6.9
9. Networking.				
a. Does school district participate in local, regional or other communications network?				
Yes . . .	37.0%	44.6%	34.8%	38.9%
b. Does district belong to local, regional or other computer consortium?				
Yes . . .	56.5	53.6	53.6	54.5

B. Mainframe Computers.

1. Type of mainframe computer used for instruction.

	Low ADM	Middle ADM	High ADM	Average
a. IBM	1.0 %	2.7 %	7.5 %	3.8 %
b. Control Data	5.8	0.9	0.9	2.5
c. Honeywell	0.	0.	2.8	0.9
d. Hewlett Packard	5.8	7.3	18.7	10.6
e. Other	10.7	18.2	14.0	14.4

2. Type of ownership.

a. Purchase	16.7 %	18.5 %	23.4 %	19.6 %
b. Lease/Rental	6.9	4.6	12.1	7.9
c. Other	3.9	4.6	7.5	5.4

3. Sources of funding for mainframe computers.

a. Local	51.60 %	58.39 %	89.25 %	70.85 %
b. Special state funds	21.21	17.14	2.79	11.57
c. Special federal funds	8.47	4.28	5.58	5.90
d. Non-public funds	0.	0.	0.	0.
e. Other	14.34	13.03	2.37	8.47

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SECTION III. PROBLEMS AND BENEFITS OF EDUCATIONAL TECHNOLOGY

A. PROBLEMS ASSOCIATED WITH USE OF EDUCATIONAL TECHNOLOGY.

1 = No Problem; 5 = Major Problem

Item	Low ADM	Med. ADM	High ADM	Average
1. Too few units of hardware available	3.92%	4.08%	4.08%	4.03%
2. Staff not adequately trained	3.75	3.57	3.68	3.66
3. Lack of understanding of technology capabilities	3.73	3.48	3.55	3.58
4. Lack of adequate software/programming	3.55	3.42	3.46	3.48
5. Hardware/software manuals not written with average user in mind	2.76	2.81	2.51	2.70
6. Implementation actually increased cost of performing function	2.45	2.26	2.25	2.32
7. Repair/maintenance of equipment	2.18	2.18	2.26	2.21
8. Technology-imposed constraints/inflexibility	1.98	2.16	2.08	2.08
9. Incompatibility of software/hardware with that previously used	2.01	2.01	1.87	1.96
10. Increase in time spent on routine tasks	1.82	1.74	1.73	1.76
11. Staff dissatisfaction	1.72	1.53	1.72	1.65
12. Decrease in student motivation/achievement	1.34	1.27	1.21	1.27
13. Student dissatisfaction	1.30	1.24	1.21	1.25
14. Other	2.33	2.75	4.75	3.36

SECTION III.

B. BENEFITS ASSOCIATED WITH USE OF EDUCATIONAL TECHNOLOGY.

1 = No Benefit; 5 = Major Benefit

Item	Low ADM	Med. ADM	High ADM	Average
1. Improved student comprehension of concepts taught by computer	3.43%	3.50%	3.46%	3.46%
2. Improved student achievement in basic skills from computer drill and practice	3.40	3.41	3.56	3.45
3. More efficient remediation of student deficiencies	3.31	3.14	3.59	3.35
4. Improved student motivation for academic work	3.79	3.81	3.87	3.82
5. Improved information on student achievement for teachers and parents	2.75	2.86	3.14	2.92
6. Improved record-keeping of student test scores, etc.	2.59	2.86	3.21	2.90
7. More flexibility in programming instruction for classroom	2.82	3.20	3.04	3.02
8. Decrease in cost of delivering instructional programming	2.12	2.28	2.16	2.19
9. Increase in efficiency in delivering instructional programming	2.74	3.01	3.05	2.94
10. Improved staff attitudes towards use of technology	3.42	3.64	3.51	3.53
11. Improved parent/community attitudes toward use of technology in schools	3.62	3.63	3.80	3.68
12. Other	0.50	5.00	4.33	3.81

APPENDIX C

AVERAGE RESPONSES BY DISTRICT PER PUPIL EXPENDITURE (PPE)*

TOTAL RESPONDENTS:	Low PPE	Middle PPE	High PPE	Average
	110	111	110	331

SECTION I. INSTRUCTIONAL USES OF EDUCATIONAL TECHNOLOGY.

A. Uses of Microcomputers or Mainframe Computers in School District Classrooms.

1. Computer-Assisted Instruction.

	Low PPE	Middle PPE	High PPE	Average
a. Drill and Practice.				
Micro	64.0%	65.7%	77.7%	69.2%
Mainframe	7.2	3.7	6.3	5.7
b. Tutorial.				
Micro	51.4	51.9	51.8	51.7
Mainframe	1.8	0.9	5.4	2.7
c. Remediation.				
Micro	58.6	57.4	67.9	61.3
Mainframe	3.6	2.8	3.6	3.3
d. Other.				
Micro	11.7	9.3	12.5	11.2
Mainframe	0.9	0.	3.6	1.5

2. Computer-Managed Instruction.

a. Student Testing.				
Micro	5.5 %	13.9 %	17.0 %	12.1 %
Mainframe	10.9	4.6	14.3	10.0
b. Generation of Student Reports.				
Micro	10.0	15.7	17.9	14.5
Mainframe	10.9	15.7	21.4	16.1

* Range: Low PPE: less than $1990 Middle PPE: $1990-$2355
High PPE: more than $2355

A. 2. Computer-Managed Instruction (Cont'd)

c. Development of Instructional Prescriptions.

	Low PPE	Middle PPE	High PPE	Average
Micro	7.3 %	9.3 %	8.9 %	8.5 %
Mainframe	2.7	3.7	7.1	4.5

d. Other.

Micro	0.9	3.7	3.6	2.7
Mainframe	0.9	0.	0.9	0.6

3. Computer-Based Learning.

a. Computer Literacy.

Micro	82.0 %	82.4 %	82.1 %	82.2 %
Mainframe	3.6	3.7	7.1	4.8

b. Computer Programming.

Micro	76.6	80.6	77.7	78.2
Mainframe	5.4	8.3	16.1	10.0

c. Word Processing.

Micro	35.1	33.3	45.5	38.1
Mainframe	0.	3.7	8.9	4.2

d. Simulation.

Micro	32.4	41.7	41.1	38.4
Mainframe	0.	4.6	4.5	3.0

e. Problem-Solving.

Micro	55.0	58.3	62.5	58.6
Mainframe	2.7	7.4	9.8	6.6

f. Other.

Micro	0.	0.9	2.7	1.2
Mainframe	0.	0.	0.	0.

B. Uses of Microcomputers or Mainframes in School District Offices.

1. Maintenance of Student Academic Records.

	Low PPE	Middle PPE	High PPE	Average
a. Grade reports.				
Micro	2.7%	6.5%	7.1%	5.5%
Mainframe	32.7	36.1	51.8	40.3
b. Classroom test scores.				
Micro	3.6	9.3	10.7	7.9
Mainframe	10.0	9.3	12.5	10.6
c. Standardized test scores.				
Micro	3.6	1.9	0.	1.8
Mainframe	14.5	13.9	22.3	17.0
d. Class rank reports.				
Micro	5.5	5.6	7.1	6.1
Mainframe	20.9	27.8	36.6	28.5
f. Transcripts.				
Micro	2.7	0.	2.7	1.8
Mainframe	6.4	10.2	20.5	12.4
f. Other.				
Micro	3.6	2.8	5.4	3.9
Mainframe	7.3	3.7	5.4	5.5

2. Maintenance of Student Non-Academic Records.

a. Class schedules.				
Micro	4.5%	5.6%	6.2%	5.4%
Mainframe	26.4	38.0	48.7	37.8
b. Attendance/Absences.				
Micro	6.4	7.4	8.0	7.3
Mainframe	23.6	25.0	38.1	29.0

B. 2. c. Discipline referrals.

	Low PPE	Middle PPE	High PPE	Average
Micro	0.9 %	2.8 %	0. %	1.2 %
Mainframe	0.	0.9	3.5	1.5

d. IEP records for handicapped students.

Micro	5.5	1.9	7.1	4.8
Mainframe	6.4	6.5	9.7	7.6

e. Guidance records.

Micro	0.9	2.8	1.8	1.8
Mainframe	8.2	7.4	14.2	10.0

f. Health/immunization records.

Micro	0.9	1.9	4.4	2.4
Mainframe	1.8	0.	4.4	2.1

g. Psychological test results.

Micro	1.8	0.	0.9	0.9
Mainframe	3.6	0.9	2.7	2.4

h. Other.

Micro	2.7	7.4	0.9	3.6
Mainframe	0.	6.5	2.7	3.0

C. Uses of Cable and/or Broadcast Television in School District Classrooms.

1. Classroom Instruction.

a. Locally produced programs.

24.3 %	29.6 %	30.1 %	28.0 %

b. Public television programs.

93.7	91.7	87.6	91.0

c. Commercial television programs.

67.6	71.3	60.2	66.3

d. Two-way interactive programming.

2.7	2.8	2.7	2.7

e. Other.

3.6	6.5	4.4	4.8

C. 2. Instruction-Related Uses.

	Low PPE	Middle PPE	High PPE	Average
a. Staff training.	51.8 %	41.7 %	44.2 %	45.9 %
b. Parent/community information.	16.4	31.5	23.9	23.9
c. Administrative bulletins/communications.	9.1	14.8	12.4	12.1
d. Other.	0.9	2.8	1.8	1.8

D. Video Technologies.

1. Classroom Instruction.

a. Basic instruction	76.6 %	77.8 %	73.5 %	75.9 %
b. Remediation.	37.8	37.0	38.9	38.0
c. Enrichment.	82.0	80.6	72.6	78.3
d. Other.	1.8	6.5	4.4	4.2

2. Instruction-Related Uses.

a. Staff training.	57.3 %	54.6 %	50.4 %	54.1 %
b. Parent/community information.	11.8	26.9	22.1	20.2
c. Administrative bulletins/communications.	12.7	9.3	8.0	10.0
d. Other.	0.	1.9	1.8	1.2

E. Public Access Cable TV Channels.

1. Number of public access channels allotted to school district:	1.57	1.65	2.20	1.80
2. Total number of public access channels available in community:	2.56	3.35	3.43	3.11
3. How many channels allotted to school district are in use:	0.88	1.83	1.63	1.46

SECTION II. PROGRAM DEVELOPMENT AND IMPLEMENTATION.

A. Microcomputers.

1. Number of Microcomputers at Each School Level.

	Low PPE	Middle PPE	High PPE	Average
a. Elementary	4.59 %	7.67 %	11.38 %	7.92 %
b. Middle	3.81	4.32	5.65	4.61
c. Junior High	3.20	5.82	10.45	6.24
d. Senior High	5.15	7.36	10.38	7.65
e. Vocational Educ.	0.55	3.53	5.27	3.15
f. Special Educ.	1.62	1.78	2.10	1.81
g. Adult/Cont. Educ.	0.50	1.16	5.66	3.12
h. Other	1.53	2.87	7.80	4.44

2. Sources of Funding for Microcomputers.

a. Local	32.72 %	30.03 %	47.20 %	36.80 %
b. Special state funds	4.30	5.70	5.55	5.18
c. Special federal funds	44.86	44.81	37.37	42.28
d. Non-public funds	7.27	11.71	5.33	8.05
e. Other	6.66	7.73	3.52	5.93

3. Brand(s) of Microcomputers.

a. Apple	53.6 %	61.1 %	63.7 %	59.5 %
b. Radio Shack	53.6	58.3	60.2	57.4
c. Texas Instruments	8.2	11.1	8.8	9.4
d. Commodore/Pet	25.5	20.4	21.2	22.4

(Cont'd)

3. Brand(s) of Microcomputers (Cont'd)

	Low PPE	Middle PPE	High PPE	Average
e. Atari	20.9%	18.5%	14.2%	17.8%
f. Timex/Sinclair	0.9	3.7	4.4	3.0
g. IBM	2.7	2.8	2.7	2.7
h. Other	8.2	9.3	5.3	7.6

4. Type of Ownership of Microcomputers.

a. Purchase	90.9%	96.3%	95.6%	94.3%
b. Lease/Rental	1.8	0.	4.4	2.1
c. Other	1.8	3.7	0.	1.8

5. Purchase Policies.

a. Formal process for approving hardware purchases:

Yes . . .	37.8%	46.3%	51.3%	45.2%

b. Formal process for approving software purchases:

Yes . . .	31.5	36.1	39.8	35.8

6. Staff Training.

a. Formal program for training teachers to use microcomputers:

Yes . . .	47.7%	40.7%	61.1%	50.0%

b. Formal training program for administrators to use microcomputers:

Yes . . .	30.6	28.7	46.0	35.2

c. Sources of training:

1) Local colleges/universities	29.1%	38.0%	39.8%	35.6%
2) Outside consultants	42.7	38.9	38.1	39.9

(Cont'd)

	Low PPE	Middle PPE	High PPE	Average
6. Staff Training (Cont'd)				
c. Sources of training:				
3) Experts on staff	44.5%	45.4%	61.9%	50.8%
4) Other	10.9	7.4	11.5	10.0
7. Facilities/Location.				
a. Microcomputers kept in self-contained "lab" settings:				
Elementary	31.5%	38.9%	45.1%	38.6%
Secondary	68.5	76.9	85.8	77.1
b. Microcomputers travel on a schedule to building classrooms:				
Elementary	38.7	42.6	37.2	39.5
Secondary	16.2	19.4	17.7	17.8
c. Microcomputers located in most classrooms				
Elementary	9.0	13.0	6.2	9.3
Secondary	10.8	5.6	2.7	6.3
8. Supervision/Scheduling.				
a. Handled by:				
1) Individual teacher	55.9%	59.3%	60.2%	58.4%
2) Computer program coordinator	10.8	16.7	24.8	17.5
3) Administrator	39.6	36.1	34.5	36.7
4) Administrative aide or secretary/clerk	5.4	8.3	7.1	6.9
9. Networking.				
a. Does school district participate in local, regional or other communications network?				
Yes . . .	34.2%	46.3%	36.3%	38.9%
b. Does district belong to local, regional or other computer consortium?				
Yes . . .	44.1	58.3	61.1	54.5

B. Mainframe Computers.

1. Type of mainframe computer used for instruction.

	Low PPE	Middle PPE	High PPE	Average
a. IBM	0.9%	4.8%	5.6%	3.8%
b. Control Data	4.7	1.0	1.9	2.5
c. Honeywell	0.	0.	2.8	0.9
d. Hewlett-Packard	8.4	10.5	13.0	10.6
e. Other	11.2	14.3	17.6	14.4

2. Type of ownership.

a. Purchase	16.0 %	18.1 %	24.5 %	19.6 %
b. Lease/Rental	4.7	7.6	11.3	7.9
c. Other	5.7	2.9	7.5	5.4

3. Source of funding for mainframe computers in percentages.

a. Local	52.00 %	75.88 %	79.40 %	70.85 %
b. Special state funds	13.00	8.46	12.61	11.57
c. Special federal funds	13.26	2.88	3.21	5.90
d. Non-public funds	0.	0.	0.	0.
e. Other	10.19	12.76	4.76	8.47

SECTION III.

A. PROBLEMS ASSOCIATED WITH USE OF EDUCATIONAL TECHNOLOGY.

1 = No Problem; 5 = Major Problem

Item	Low PPE	Med. PPE	High PPE	Average
1. Too few units of hardware available	3.97%	4.20%	3.93%	4.03%
2. Staff not adequately trained	3.72	3.78	3.50	3.66
3. Lack of understanding of technology capabilities	3.62	3.61	3.52	3.58
4. Lack of adequate software/programming	3.45	3.53	3.45	3.48
5. Hardware/software manuals not written with average user in mind	2.68	2.64	2.76	2.70
6. Implementation actually increased cost of performing function	2.32	2.20	2.42	2.32
7. Repair/maintenance of equipment	2.05	2.21	2.35	2.21
8. Technology-imposed constraints/inflexibility	1.93	1.96	2.31	2.08
9. Incompatibility of software/hardware with that previously used	1.92	1.91	2.04	1.96
10. Increase in time spent on routine tasks	1.75	1.72	1.82	1.76
11. Staff dissatisfaction	1.56	1.66	1.73	1.65
12. Decrease in student motivation/achievement	1.30	1.20	1.31	1.27
13. Student dissatisfaction	1.28	1.17	1.28	1.25
14. Other	3.20	4.66	2.33	3.36

SECTION III.

B. BENEFITS ASSOCIATED WITH USE OF EDUCATIONAL TECHNOLOGY.

1 = No Benefit; 5 = Major Benefit

Item	Low PPE	Med. PPE	High PPE	Average
1. Improved student comprehension of concepts taught by computer	3.49%	3.58%	3.34%	3.46%
2. Improved student achievement in basic skills from computer drill and practice	3.48	3.54	3.35	3.45
3. More efficient remediation of student deficiencies	3.31	3.33	3.40	3.35
4. Improved student motivation for academic work	3.82	3.80	3.85	3.82
5. Improved information on student achievement for teachers and parents	2.79	2.90	3.06	2.92
6. Improved record-keeping of student test scores, etc.	2.74	2.88	3.06	2.90
7. More flexibility in programming instruction for classroom	3.05	3.00	3.02	3.02
8. Decrease in cost of delivering instructional programming	2.14	2.12	2.30	2.19
9. Increase in efficiency in delivering instructional programming	2.96	2.96	2.91	2.94
10. Improved staff attitudes towards use of technology	3.66	3.43	3.48	3.53
11. Improved parent/community attitudes toward use of technology in schools	3.54	3.85	3.69	3.68
12. Other	2.50	5.00	3.85	3.81

APPENDIX D

JOINT VOCATIONAL SCHOOL RESULTS

Instructional Uses of Microcomputers.

The results for the 28 joint vocational school (JVS) districts that responded to the survey were analyzed separately from the other school district results because of the differences in student population and organization of the JVS programs. The results are presented in tables at the end of this appendix.

Instructional Uses of Educational Technology.

Joint vocational districts showed greater use of microcomputers than mainframes for all three types of computer-assisted instructional activities (CAI). However, they did report much more use of mainframes for these activities than did the regular school districts. Fifty percent of the JVS districts reported using the micro for remediation, 39.3% for drill and practice, and 28.6% for tutorial instruction. However, 25% also use the mainframe for tutorial instruction, 14.3% use it for remediation, and 10.7% use it for drill and practice.

For computer-managed instruction tasks (CMI), 35.7% of the joint vocational schools reported using the mainframe computer versus 17.9% using the microcomputer for generation of student reports. The same percentage of districts (14.3%) reported using both types of computers for student testing. Few of the districts use the computer for development of instructional prescriptions.

For computer-based learning activities (CBL), JVS districts showed some similarities to and some differences from regular districts. A high percentage of the JVS districts use microcomputers for word processing (75%) and computer literacy (71.4%). They also reported percentages of microcomputer use for problem-solving (53.6%) and simulation activities (32.1%) similar to those of regular districts. However, JVS districts also showed a much higher usage of mainframe computers for computer programming (64.3%), word processing (32.1%), simulation (17.9%), and problem-solving activities (21.4%) than did regular districts. More of the JVS districts also used the mainframe for teaching computer programming (64.3%) than used micros (46.4%).

Over 50% of the joint vocational schools use a mainframe to produce student grade reports as part of their maintenance of student records.

Nearly 19% also use the mainframe for transcript records. However, they showed little use of micros or mainframes for the other functions of maintaining test scores and class rank reports.

To maintain student non-academic records, the JVS districts used mainframes for attendenace/absence data (53.8%), class schedules (30.8%), and guidance records (23.1%). They showed little usage of either type of computer for maintaining other records.

Joint vocational schools reported somewhat less usage of public and commercial television for classroom instruction than the regular districts although they did report nearly as much use of locally-produced programming. Nearly 36% of the JVS districts use cable or broadcase television for staff training and over 10% use it for parent/community information and administrative communications.

The joint vocational school districts also reported somewhat less usage of video technology for instruction and information/training. Nearly 68% use video technology for basic instruction, 54% use it for enrichment, and 36% for remediation. About 32% of the JVS districts use video for staff training, 21% for parent/community information, and 18% for administrative communications.

Program Development and Implementation.

The joint vocational schools responding to the survey indicated an average of 16.5 microcomputers in their vocational school programs and 12 in their adult/continuing education programs (four districts). Two districts reported an average of 11 micros in their adult/continuing education programs. About 75% of the districts have paid for their micros out of local funds versus less than half that percentage in the regular districts. About 21% had used special federal funds for their micro purchases which is less than half the percentage in the regular districts.

Fifty-three percent of the joint vocational school districts reported using the Radio Shack microcomputer, 46.4% use the Apple computer, and 18% use the Commodore/Pet. Nearly 14.3% reported using the IBM micro which is a much higher percentage than that in the regular schools (2.7%). Twenty-five percent also reported using other brands of micros in their programs. Ninety-six percent of the JVS districts reported purchasing their micros but nearly 11% also reported using lease/rental arrangements.

Forty-six percent of the joint vocational schools have a formal process for approving hardware purchases and 32% have a formal process for software purchases. These percentages correspond quite closely to those in the regular schools.

About 46% of the JVS districts have a formal program to train teachers in the use of microcomputers and about 36% have a similar program for administrators. Fifty-seven percent use experts on their own staffs to do the training, 29% use outside consultants, and 25% use local colleges or universities for training assistance.

Eighty-two percent of the joint vocational schools reported using their micros in lab settings while only 7% (two districts) have them on traveling schedules. Three districts reported having micros in most of their classrooms. Program supervision is handled by an individual teacher in 43% of the JVS districts, by an administrator in 36%, and by a computer program coordinator in 21%. Thirty-six percent of the joint vocational schools belong to a local or regional communications network and 57% belong to a local or regional computer consortium.

Twenty-eight percent of the JVS districts use an IBM mainframe computer in their instructional program, 8% use the Hewlett-Packard, and 40% use some other type of mainframe. Fifty-two percent of the districts have purchased their mainframe while 28% lease or rent them. Sixty-five percent used local funds to purchase their mainframes and 30% used special federal funds.

Problems and Benefits of Educational Technology.

On the items to rate the problems associated with educational technology, the lack of adequately trained staff was seen as the major problem by the joint vocational school districts. Too few hardware units and lack of adequate software and hardware were also highly rated problem items. The lowest rated problem items included staff and student dissatisfaction and decrease in student motivation or achievement.

Improved staff, parent and community attitudes towards the use of technology in the schools were the two items rated highest as benefits of educational technology. Improved student comprehension and achievement were also highly rated as benefits. Improved student motivation for academic work ranked lower as a benefit in the joint vocational school results than it did in the regular school results. The JVS districts gave their lowest ratings to the items on improved information for parents and teachers and on decrease in cost of delivering instructional programming.

AVERAGE RESPONSES BY JOINT VOCATIONAL SCHOOLS

Total Respondents = 28

SECTION I. INSTRUCTIONAL USES OF EDUCATIONAL TECHNOLOGY.

A. Uses of Microcomputers or Mainframe Computers in School District Classrooms.

1. Computer-Assisted Instruction.

a. Drill and Practice

Micro	39.3%
Mainframe	10.7

b. Tutorial

Micro	28.6
Mainframe	25.0

c. Remediation

Micro	50.0%
Mainframe	14.3

d. Other

Micro	14.3
Mainframe	7.1

2. Computer-Managed Instruction.

a. Student Testing

Micro	14.3%
Mainframe	14.3

b. Generation of Student Reports

Micro	17.9
Mainframe	35.7

c. Development of Instructional Prescriptions

Micro	0.0%
Mainframe	3.6

d. Other

Micro	0.0
Mainframe	0.0

3. Computer-Based Learning.

a. Computer Literacy

Micro	71.4%
Mainframe	25.0

b. Computer Programming

Micro	46.4
Mainframe	64.3

c. Word Processing

Micro	75.0
Mainframe	32.1

d. Simulation

Micro	32.1%
Mainframe	17.9

e. Problem-Solving

Micro	53.6
Mainframe	21.4

f. Other

Micro	0.0
Mainframe	0.0

B. Uses of Microcomputers or Mainframes in School District Offices.

1. Maintenance of student academic records.

a. Grade reports

Micro	7.4%
Mainframe	51.9

b. Classroom test scores

Micro	7.4
Mainframe	3.7

c. Standardized

Micro	0.0
Mainframe	3.7

d. Class rank reports

Micro	0.0%
Mainframe	7.4

e. Transcripts

Micro	0.0
Mainframe	14.8

f. Other

Micro	0.0
Mainframe	14.8

2. Maintenance of student non-academic records.

a. Class schedules

Micro	7.7%
Mainframe	30.8

b. Attendance/absences

Micro	19.2
Mainframe	53.8

c. Discipline referrals

Micro	3.8
Mainframe	7.7

d. IEP records for handicapped students

Micro	7.7
Mainframe	7.7

e. Guidance records

Micro	7.7%
Mainframe	23.1

f. Health/immunization records

Micro	0.0
Mainframe	3.8

g. Psychological test results

Micro	3.8
Mainframe	0.0

h. Other

Micro	0.0
Mainframe	11.5

C. Uses of Cable and/or Broadcast Television in School District Classrooms.

1. Classroom Instruction.

a. Locally produced programs	25.9%
b. Public television programs	70.4
c. Commercial television programs	44.4
d. Two-way interactive programming	0.0
e. Other	0.0

2. Instruction-Related Uses.

a. Staff training	35.7%
b. Parent/community information	10.7
c. Administrative bulletins/ communications	10.7
d. Other	3.6

D. Video Technologies.

1. Classroom Instruction.

a. Basic instruction	67.9%
b. Remediation	35.7
c. Enrichment	53.6
d. Other	0.0

2. Instruction-Related Uses.

a. Staff training	32.1%
b. Parent/community information	21.4
c. Administrative bulletins/ communications	17.9
d. Other	3.6

E. Public Access Cable TV Channels.

1. Number of public access channels allotted to school district	1.70
2. Total number of public access channels available in community	1.50
3. How many channels allotted to school district are in use?	1.21

SECTION II. PROGRAM DEVELOPMENT AND IMPLEMENTATION.

A. Microcomputers.

1. Average Number of Microcomputers at Each School Level.

a. Vocational Education	16.5
b. Special Education	12.0
c. Adult/Continuing Education	11.0
d. Other	1.5

2. Sources of Funding for Microcomputers.

a. Local	74.8%
b. Special state funds	3.88
c. Special federal funds	20.67
d. Non-public funds	0.42
e. Other	0.21

3. Brand(s) of Microcomputers.

a. Apple	46.4%
b. Radio Shack	53.6
c. Texas Instruments	3.6
d. Commodore/Pet	17.9
e. Atari	7.1
f. Sinclair	0.0
g. IBM	14.3
h. Other	25.0

4. Type of Ownership of Microcomputers.

a. Purchase	96.4%
b. Lease/Rental	10.7
c. Other	0.9

5. Purchase Policies.

a. Formal process for approving hardware purchases:

Yes	46.4%
No	53.6

b. Formal process for approving software purchases:

Yes	32.1%
No	67.9

6. Staff Training.

a. Formal program for training teachers to use microcomputers:

Yes	46.4%

b. Formal program for administrators to use microcomputers:

Yes	35.7%

c. Sources of training:

1) Local colleges/universities	25.0%
2) Outside consultants	28.6
3) Experts on staff	57.1
4) Other	10.7

7. Facilities/Location.

a. Microcomputers kept in self-contained "lab" settings: 82.1%

b. Microcomputers travel on a schedule to building classrooms: 7.1%

c. Microcomputers located in most classrooms: 10.7%

8. Supervision/Scheduling.

   a. Handled by:

1) Individual teacher	42.9%
2) Computer program coordinator	21.4
3) Administrator	35.7
4) Administrative aide or secretary/clerk	3.6

9. Networking.

   a. Does school district participate in local, regional or other communications network?

      Yes - 35.7%

   b. Does district belong to local, regional or other computer consortium?

      Yes - 57.1%

B. Mainframe Computers.

   1. Type of mainframe computer used for instruction.

a. IBM	28.0%
b. Control Data	0.0
c. Honeywell	0.0
d. Hewlett Packard	8.0
e. Other	40.0

   2. Type of ownership.

a. Purchase	52.0%
b. Lease/Rental	28.0
c. Other	0.0

   3. Source of funding for mainframe computers in percentages.

a. Local	65.0%
b. Special state funds	0.0
c. Special federal funds	30.3
d. Non-public funds	0.0
e. Other	4.6

SECTION III. A. PROBLEMS ASSOCIATED WITH USE OF EDUCATIONAL TECHNOLOGY.

1 = No Problem; 5 = Major Problem

Item		Average
1.	Staff not adequately trained	3.46
2.	Too few units of hardware available	3.26
3.	Lack of adequate software/programming	3.19
4.	Lack of understanding of technology capabilities	2.92
5.	Hardware/software manuals not written with average user in mind	2.89
6.	Implementation actually increased cost of performing function	2.52
7.	Technology-imposed constraints/inflexibility	2.29
8.	Repair/maintenance of equipment	2.19
9.	Increase in time spent on routine tasks	1.96
10.	Incompatibility of software/hardware with that previously used	1.83
11.	Staff dissatisfaction	1.65
12.	Student dissatisfaction	1.17
13.	Decrease in student motivation/achievement	1.12

SECTION III. B. BENEFITS ASSOCIATED WITH USE OF EDUCATIONAL TECHNOLOGY.

1 = No Problem; 5 = Major Problem

Item	Average
1. Improved parent/community attitudes toward use of technology in schools	4.08
2. Improved staff attitudes towards use of technology	4.04
3. Improved student comprehension of concepts taught by computer	3.88
4. Improved student achievement in basic skills from computer drill and practice	3.63
5. Improved record-keeping of student test scores, etc.	3.61
6. Improved student motivation for academic work	3.55
7. More efficient remediation of student deficiencies	3.29
8. More flexibility in programming instruction for classroom	3.26
9. Increase in efficiency in delivering instructional programming	3.09
10. Improved information on student achievement for teachers and parents	3.14
11. Decrease in cost of delivering instructional programming	2.18

APPENDIX E

Ohio School District Survey

INSTRUCTIONAL USES OF

EDUCATIONAL TECHNOLOGY

Ohio Department of Education

Conducted by:

Cincinnati Public Schools

ECIA-2 Special Purpose Grant

March 1983

SECTION I. INSTRUCTIONAL USES OF EDUCATIONAL TECHNOLOGY

A. Check those categories for which Microcomputers or Mainframe Computers are used in school district classrooms:

Micro	Main	
		1. Computer-Assisted Instruction
___	___	a. Drill and practice (basic reading and math skills)
___	___	b. Tutorial (teaching new concepts in a subject area)
___	___	c. Remediation (reteaching/reinforcing skills)
___	___	d. Other (Please specify)_____
		_____
		2. Computer-Managed Instruction
___	___	a. Student testing (diagnostic or achievement)
___	___	b. Generation of student reports
___	___	c. Development of instructional prescriptions
___	___	d. Other (Please specify)_____
		_____
		3. Computer-Based Learning
___	___	a. Computer literacy (learning about computers and how to operate them)
___	___	b. Computer programming (learning how to write programs for computers)
___	___	c. Word processing (using the computer for composing/ editing written words)
___	___	d. Simulation (using computer to simulate real events and processes, e.g., scientific, economic, etc.)
___	___	e. Problem-solving (using computer to solve exercises or actual problems, e.g., math, social studies)
___	___	f. Other (Please specify)_____
		_____

B. Check those categories for which Microcomputers or Mainframes are used in school district offices:

Micro	Main	
		1. Maintenance of student academic records.
___	___	a. Grade reports
___	___	b. Classroom test scores
___	___	c. Standardized (district-wide) test scores
___	___	d. Class rank reports
___	___	e. Transcripts
___	___	f. Other (Please specify)_____
		_____

SECTION I. (CONT'D)

B. Use in school district offices (Cont'd)

Micro	Main	
		2. Maintenance of student non-academic records.
___	___	a. Class schedules
___	___	b. Attendance/absences
___	___	c. Discipline referrals (truancy, suspension, etc.)
___	___	d. IEP records for handicapped students
___	___	e. Guidance records (vocational/college counseling)
___	___	f. Health/immunization records
___	___	g. Psychological test results
___	___	h. Other (Please specify)_____
		_____

C. Check those categories for which Cable and/or Broadcast Television is used in school district classrooms or instruction-related uses:

1. Classroom Instruction

___	a. Locally produced programs
___	b. Public television programs
___	c. Commercial television programs
___	d. Two-way interactive programming
___	e. Other (Please specify)_____
	_____

2. Instruction-Related Uses

___	a. Staff training
___	b. Parent/community information
___	c. Administrative bulletins/communications
___	d. Other (Please specify)_____
	_____

D. Other types of technologies (e.g., videodisc, video cassette, videotape recording, etc.):

	1. Classroom Instruction	Indicate Type:
___	a. Basic instruction	_____
___	b. Remediation	_____
___	c. Enrichment	_____
___	d. Other _____	_____
	_____	_____

	2. Instruction-Related Uses	Indicate Type:
___	a. Staff Training	_____
___	b. Parent/community info.	_____
___	c. Administrative bulletins/communications	_____
___	d. Other _____	_____
	_____	_____

SECTION II. PROGRAM DEVELOPMENT AND IMPLEMENTATION

A. Microcomputers.

Indicate the Number of Microcomputers at Each School Level (estimate if necessary)

_____ a. Elementary (K-6, K-5 or K-4)
_____ b. Middle (7-8, 6-8, 5-8)
_____ c. Junior High (7-9 or 7-8)
_____ d. Senior High (10-12 or 9-12)
_____ e. Vocational Education
_____ f. Special Education
_____ g. Adult/Continuing Education
_____ h. Other (Please specify)_____
_____

1. Indicate the Source of Funding by percentage (estimate if necessary)

_____ a. Local
_____ b. Special state funds (DPPF, Educational Mobility, etc.) (Please specify)_____
_____ c. Special Federal funds (Chapter 1, Chapter 2, Vocational Education, ESEA IV-B, etc.) (Please specify)_____
_____ d. Non-public funds (foundations, private donations, business, etc.) (Please specify)_____
_____ e. Other (Please specify)_____
_____

2. Brand(s) of Microcomputers.

Check those brands which you use in your district:

_____ a. Apple
_____ b. Radio Shack
_____ c. Texas Instruments
_____ d. Commodore/Pet
_____ e. Atari
_____ f. Sinclair
_____ g. IBM
_____ h. Other (Please specify)_____
_____

3. Type of Ownership of Microcomputers.

Check the plan(s) which applies to your district:

_____ a. Purchase
_____ b. Lease/Rental
_____ c. Other (Please specify)_____
_____

SECTION II. PROGRAM DEVELOPMENT AND IMPLEMENTATION (Cont'd)

4. Purchase Policies.

Yes	No	Do you have a:
____	____	a. formal process for approving hardware purchase for district-wide use?
____	____	b. formal process for approving software purchase for district-wide use?

5. Staff Training.

Yes	No	Do you have a:
____	____	a. formal program for training teachers in use of micro-computers?
____	____	b. formal training program for administrators?
		c. Sources of training:
____		1) Local colleges/universities
____		2) Outside consultants
____		3) Experts on staff
____		4) Other (Please specify_____)

6. Facilities/Location

Elem	Second.	
____	____	a. Microcomputers kept in self-contained "lab" setting
____	____	b. Microcomputers travel on a schedule to building classrooms
____	____	c. Microcomputers located in most classrooms

7. Supervision/Scheduling handled by:

____	a. Individual teacher
____	b. Computer program coordinator
____	c. Administrator
____	d. Administrative aide or secretary/clerk

8. Networking

Yes	No	
____	____	a. Does school district participate in a local, regional or other communications network?
____	____	b. Does district belong to a local, regional or other computer consortium?

SECTION II. PROGRAM DEVELOPMENT AND IMPLEMENTATION (Cont'd)

Brand

B. Mainframe Computers.

1. Type of mainframe computer used for instruction

___ a. IBM
___ b. Control Data
___ c. Honeywell
___ d. Hewlett Packard
___ e. Other (Please specify)_____
_____

2. Type of Ownership:

___ a. Purchase
___ b. Lease/Rental
___ c. Other (Please specify)_____
_____

3. Indicate Source of Funding by percentage (estimate if necessary)

___ a. Local
___ b. Special state funds (DPPF, Educational Mobility, etc.)
(Please specify)_____
_____
___ c. Special Federal funds (Chapter 1, Chapter 2, Vocational Education, ESEA IV-B, etc.)
(Please specify)_____
_____
___ d. Non-public funds (foundations, private donations, business, etc.)
(Please specify)_____
_____
___ e. Other (Please specify)_____
_____

C. Cable and/or Broadcast Television.

___ 1. Number of public access channels allotted to the school district.

___ 2. Total number of public access channels available in community.

___ 3. How many allotted to the school district are in use?

SECTION III. PROBLEMS AND BENEFITS ASSOCIATED WITH USE OF EDUCATIONAL TECHNOLOGY.

A. Rate the degree to which the following items are seen as Problems in the use of technology in your school district:
(Rating scale: 1 = no problem; 5 = major problem)

1. Staff not adequately trained
2. Lack of understanding of technology capabilities
3. Lack of adequate software/programming
4. Too few units (micro, terminals, TV's) of hardware available
5. Hardware/software manuals not written with average user in mind.
6. Implementation actually increased cost of performing function.
7. Repair/maintenance of equipment
8. Technology-imposed constraints/inflexibility
9. Incompatibility of software/hardware with that previously used.
10. Increase in time spent on routine tasks
11. Staff dissatisfaction
12. Decrease in student motivation/achievement
13. Student dissatisfaction
14. Other. Describe: _____

B. Rate the degree to which the following items are seen as Benefits in the use of technology in your school district:
(Rating scale: 1 = no benefit; 5 = major benefit)

1. Improved student achievement in basic skills from computer drill and practice.
2. Improved student comprehension of concepts taught by computer.
3. More efficient remediation of student deficiencies
4. Improved student motivation for academic work
5. Improved information on student achievement for teachers and parents.
6. Improved record-keeping of student test scores, grades, etc.
7. More flexibility in programming instruction for classroom
8. Decrease in cost of delivering instructional programming
9. Increase in efficiency in delivering instructional programming.
10. Improved staff attitudes towards use of technology
11. Improved parent/community attitudes toward use of technology in schools.
12. Other. Describe: _____

SECTION IV. COMMENTS REGARDING APPLICATIONS, PLANS AND RECOMMENDATIONS REGARDING EDUCATIONAL TECHNOLOGY.

A. Describe the most successful application of educational technology in your school district:

B. What is the most negative aspect of your district's use of educational technology?

C. What is the most positive result of your district's use of educational technology?

D. What future plans do you have for using additional educational technology in your district?

E. What recommendations do you have for other school districts interested in the technology applications (computers or TV) similar to those in your district?

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